

THE SPIDER FAMILY ANYPHAENIDAE IN AMERICA NORTH OF MEXICO¹

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ABSTRACT. Evidence from the tracheal system, claw tufts and courtship behavior is used to justify the family status of Anyphaenidae. Suggested relationships between Anyphaenidae and Chubionidae, Amaurobiidae and Argyronetidae are disclaimed. The family Amaurobioididae is newly synonymized with Anyphaenidae. Generic problems within the family are discussed. The thirty-six species occurring north of Mexico are described, their diagnostic characters pointed out and illustrated, their distributions mapped, notes on their habits given, and keys to genera, species groups and species provided. The genera *Anyphaenella* and *Cragus* are newly synonymized with *Wulfila*. Thirteen species are described as new: *Anyphaena alachua*, *A. arbida*, *A. autumnna*, *A. catalina*, *A. cochise*, *A. gertschi*, *A. gibboides*, *A. hespar*, *A. lacka*, *A. rita*, *Aysha arunda*, *Wulfila bryantae* and *W. wunda*. Nineteen new synonymies are recognized.

INTRODUCTION

This study had three objectives: to determine whether or not the anyphaenids should be treated as a distinct family; to examine the relationships between the anyphaenids and the other groups of spiders with which they have been associated in the past; and to reclassify the species oc-

curring north of Mexico on generic and specific levels.

The anyphaenids are a diverse group with perhaps five hundred species. Thirty-six species are known to occur in America north of Mexico and are included here. About 375 species have been described from the Neotropic region, as well as around ten from the Palearctic and five from the Oriental. The South American species show the widest spectrum of body forms; they range from 2–25 mm in length and are often intricately colored or have peculiarly elongate chelicerae or legs.

As in most spiders, little is known of the ecology or behavior of anyphaenids. They are wandering hunters. In the eastern United States, where long-legged species predominate, they are most often collected by sweeping foliage in fields and meadows, and seem to be primarily nocturnal. However, in the western United States, where most species have shorter legs, they are usually found in forests by sifting through litter and turning logs and stones. They feed on various groups of insects, and though they have been observed to prey heavily on such Lepidoptera as the fall webworm, *Hyphantria cunea* (Warren et al., 1967), they are probably not very selective. In captivity they will consume *Drosophila* eagerly. Their principal enemies in nature are the mud-dauber wasps of the family Sphecidae, as evidenced from the hundreds of individuals, particularly

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of the diurnally active genus *Aysha*, that are frequently collected from wasp nests. Krombein (1967) cites especially the wasp genus *Trypargilum* in this respect. Like most nearctic spiders, males and females usually mature in early spring, with males living through early summer and females living through the summer. In some southern species, however, both sexes are found mature year-round. Also, some species in the *Anyphaena celer* group are mature throughout the winter. Anyphaenids make little use of silk, other than in building retreats under leaves or stones and of course in building egg sacs, which are usually round, made of soft white silk, not leathery or papery, and contain between 50 and 150 eggs.

The North American species are 2–9 mm long; the largest species belong to the genus *Aysha*, the smallest to *Wulfila*. There are always eight eyes in two rows; the median eyes are usually closer to the laterals than to each other; unlike many gnaphosids, the eyes are always round, and unlike many clubionids, the anterior median eyes are usually smaller than the others. Other than the genitalia, the main structural differences between males and females are the sternal and coxal modifications (pointed spurs, rounded knobs, or clumps of short thick setae) found on males in some groups.

In many species groups it would be impossible to distinguish the species without using genitalic characters. The palpus (Text-fig. 3) usually has a large median apophysis (the shape of which is often species-specific), a small conductor and a conspicuous embolus. Besides the retrolateral tibial apophysis (almost always of great diagnostic value) a ventral tibial apophysis (some *Aysha*) or a retrolateral patellar apophysis (some *Teudis*) may be present. The female epigyna and internal genitalia are extremely diverse and difficult to characterize. The two epigynal openings are located posteriorly and are extremely difficult to see unless a portion

of the male embolus has been left behind after mating. Many species have an additional anterior median epigynal opening into which the retrolateral tibial apophysis or median apophysis fits during mating. The genitalia of anyphaenids, particularly of the South American species, are more complex than those of clubionids and gnaphosids. Among the clubionids, only *Chiracanthium* has genitalia that seem in any way close to those of anyphaenids.

For the area treated here, only three important papers have been published on anyphaenids. Bryant (1931) summarized the very sparse data then available on the group in the United States, while Chickering (1937, 1940) described many of the species occurring in Panama and the Canal Zone, a number of which also occur in the United States.

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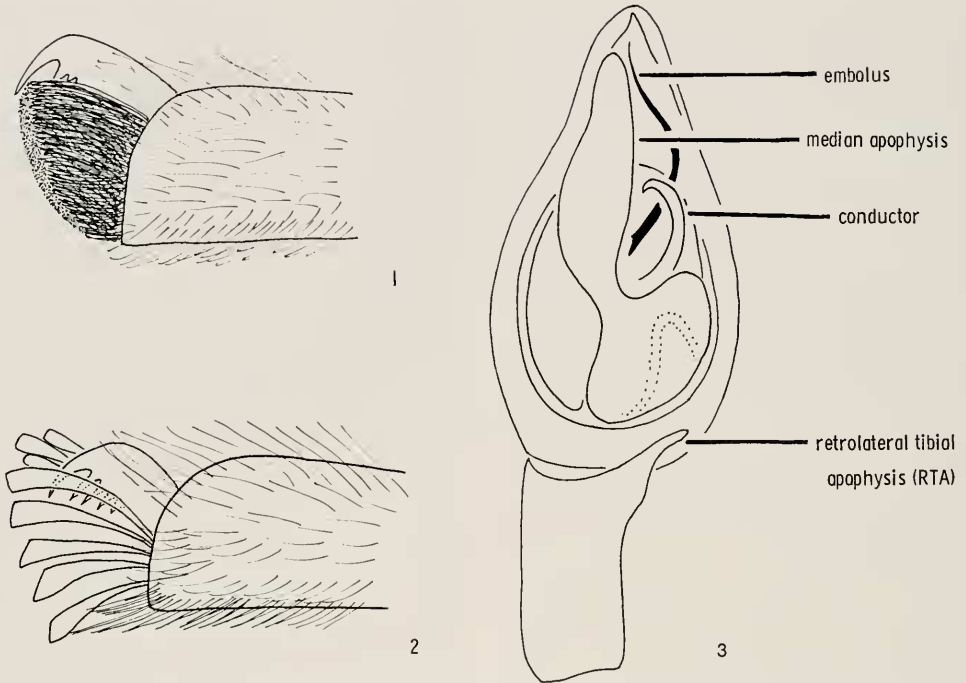
THE FAMILY STATUS OF ANYPHAENIDAE

Simon considered the anyphaenids to be a subfamily of the large family Clubionidae and used as the key character for distinguishing the anyphaenids the advanced placement of the tracheal spiracle. Later authors, notably Petrunkevitch and Bristowe, thought this character so significant that they gave the anyphaenids family status, though still believing the group to be closely related to the Clubionidae. The comparatively recent discovery that in some families closely related, congeneric species sometimes have very different respiratory systems (see Levi, 1967) has led most arachnologists to denigrate the importance of respiratory structures as macro-taxonomic characters. Thus most modern arachnological works still treat the anyphaenids as a subfamily of Clubionidae. A notable exception, however, is Lehtinen (1967), who maintains (correctly, I believe) that the classical family Clubionidae is a highly polyphyletic assemblage of unrelated two-clawed spiders that lack any noticeable modifications of the body. Lehtinen splits the clubionids into several families, largely but not strictly along the lines of the old subfamily divisions, and accords the anyphaenids full status as a family.

Forster (1970) agrees with this assessment of the anyphaenids.

To check on the validity of this classification, a variety of clubionid genera were examined and compared with anyphaenids, with the result that the anyphaenids are here considered a distinct family, for two major reasons. One is the classical reason—the tracheal system. Examination of the tracheae of males and females of the clubionids *Clubiona obesa* Hentz, *Chiracanthium mildei* L. Koch, *Trachelas tranquillus* (Hentz), *Castianeira cingulata* (C. L. Koch), *Agroeca pratensis* Emerton, *Phrurotimpus alarius* (Hentz), and the anyphaenids *Anyphaena celer* (Hentz), *Anyphaena pectorosa* L. Koch, *Anyphaena californica* (Banks) and *Aysha gracilis* (Hentz) disclosed three major differences between anyphaenid and clubionid tracheae (see Methods for the technique used). First, anyphaenid tracheae extend through the pedicel of the spider into the cephalothorax and legs, while those of clubionids are restricted to the abdomen (see Figs. 47 and 50). Associated with this is the externally observable advanced placement of the tracheal spiracle in anyphaenids. Second, the tracheae are relatively much larger in anyphaenids. In all the clubionids examined, even the main tracheal tubes are very thin and narrow; anyphaenid tracheae are three to four times as wide. Third, none of the clubionid species examined showed any sexual dimorphism in the tracheal system, whereas male anyphaenids have considerably larger tracheae than do the females. The size of the tracheae may be correlated with the high activity levels of anyphaenids: my collecting experience indicates that they can run extremely rapidly when disturbed.

The larger size of the tracheae in males may be associated with the increased respiration necessary for the extra activity required to locate, court and copulate with a female. Anyphaenid courtship is extremely active; films of the courtship of *Anyphaena accentuata* show that the abdo-



Text-Figures 1-3. Claw tuft of *Clubiona obesa* Hentz, lateral view, diagrammatic. 2. Claw tuft of *Aysha gracilis* (Hentz), lateral view, diagrammatic. 3. Generalized palpal structure of *Anyphaena*.

men of the male is vibrated up and down so rapidly that only a blur is visible (Thompson, G. H., and E. R. Skinner, *Courtship in Spiders*, Oxford Scientific Films). Although the mating behavior of very few species in either group has been studied in detail, the vast difference between anyphaenid courtship and the rather sluggish courtship behavior of *Clubiona* and related genera would seem to provide additional evidence for separating the two groups (Platnick, 1971).

Evidence that is probably just as important as the tracheae for considering Anyphaenidae a distinct group is provided by the claw tufts. Clubionids have claw tufts that are composed of numerous straight simple setae densely clumped together (Text-fig. 1). Anyphaenid claw tufts, however, are composed of two rows of large, lamelliform setae that are greatly expanded at their distal ends (Text-fig. 2). All the anyphaenids examined have these peculiar,

easily recognizable claw tufts, but so far as known, no clubionids do, though some phruroliths have superficially similar claw tufts.

For these reasons, Anyphaenidae is here considered a distinct family not very closely related to any of the groups currently included in the Clubionidae.

RELATIONSHIPS OF THE FAMILY ANYPHAENIDAE

In addition to the clubionids, the anyphaenids have been associated with three other families of spiders: Amaurobiidae, Argyronetidae and Amaurobioididae. Lehtinen (1967) placed the anyphaenids in his branch Amaurobiides and stated that they are probably derived from Amaurobiidae: Macrobuninae and therefore lack ecribellate, two-clawed relatives. Forster (1970) agreed with the placement of Anyphaenidae in Amaurobiides (and specifi-

cally included the family in his superfamily Dictynoidea) but cited the families Argyronetidae and Amaurobioididae as close relatives. Representatives of all three families were examined to determine the degree of their relationship, if any, to the Anyphaenidae.

Lehtinen gave no evidence for his statement that the anyphaenids are probably derivatives of Amaurobiidae: Macrobulinae, presumably because there seems to be none. An examination of specimens of one genus in this subfamily, *Arctobius* Lehtinen, indicates that it would be difficult to find araneomorph spiders less likely to have given rise to the anyphaenids. The species of *Arctobius* are cribellate, three-clawed spiders that lack claw tufts and possess an unelaborated tracheal system. Further, the genitalia show no similarities to those of anyphaenids.

Likewise, Forster gave no evidence for associating the family Argyronetidae with the anyphaenids; his decision to do so was based, I believe, on the similarities in the tracheal systems of the two groups. The elaboration of the tracheal system in *Argyroneta*, however, is probably associated with their invasion of an aquatic habitat and the resultant demands on the respiratory system. All the other characters, including the three claws, lack of claw tufts and the characteristic pattern of trichobothria distribution, indicate that *Argyroneta* is, as it is usually regarded, a close relative (if not actually a member) of the family Agelenidae.

The family Amaurobioididae was created by Hickman (1949) for the single genus *Amaurobioides* O. P.-Cambridge, which has at various times been included in the families Drassidae (= Gnaphosidae), Ctenidae, Clubionidae and Miturgidae. The genus is known from New Zealand, Tasmania, southern Chile and South Africa. The spiders live in rock crevices in the tidal zone, where they build tubular silk retreats and are regularly submerged at high tide (Lamoral, 1968).

Specimens of this rare genus provided by R. R. Forster revealed not only a typically anyphaenid-like tracheal system, but also the lamelliform claw tufts so characteristic of anyphaenids. Further, the genitalia are close to those of the anyphaenid genus *Oxysona*, and the body form is similar to that of several species of anyphaenids known from Chile, Peru, and Argentina. For these reasons, the family Amaurobioididae is newly synonymized with Anyphaenidae in the taxonomic section of this paper.

Thus the problem of the correct macro-taxonomic placement of Anyphaenidae has been clarified but not solved by this study of the groups with which the family has been associated in the past. Future work should start with an examination of the family Miturgidae (as construed by Lehtinen).

Although it was necessary to limit the scope of the detailed revision to the manageable number of species occurring north of Mexico, all available specimens from other areas were examined to gain an overview of the family. Preliminary impressions indicate that the family probably originated in the southern half of South America with subsequent radiations northward. As indicated by the ability of *Amaurobioides* to withstand prolonged submersion, it is likely that early anyphaenids were able to survive hydrochore dispersal by rafting, etc., across considerable expanses of water.

GENERIC PROBLEMS IN THE ANYPHAENIDAE

The generic taxonomy of anyphaenids is currently chaotic. Every author who has worked with the group, including Petrunkevitch (1930), Bryant (1931) and Chickering (1937), has expressed frustration at the confusion and ambiguity in the use of many of the most common generic names. One of the principal causes of this confusion is the interesting evolutionary pattern encountered time and again within

this family: species tend to occur in groups that are remarkably homogeneous in genitalic structure but quite distinct from other such groups. Often many of the species in these groups are sympatric, are found in a rather limited area and are clearly the result of radiation within that area. An excellent example of this is the occurrence of nine closely related species of the *Anyphaena celer* species group in the mountains of southeastern Arizona. It is tempting to consider each of these groups a genus, as unambiguous key characters are then available to distinguish genera. Such an approach would at least double the number of genera found in the United States, and, if applied to the Central and South American fauna, would necessitate the creation of a vast number of new genera. If, instead, characters referring to the general body form are used, a more workable classification in terms of both number and size of genera results. Unfortunately, this makes the unambiguous definition of genera much more difficult and makes keys to genera awkward and cumbersome. With either approach, however, reliable genera composed of monophyletic groups of species can be established.

The second approach to anyphaenid classification has been taken by the majority of former authors, and is continued in this work. Thus the European genus *Anyphaena* is used for the bulk of the anyphaenids occurring in the United States, even though only one of our species, *Anyphaena aperta*, is actually a close relative of the European *Anyphaena accentuata*, type species of the genus. Nonetheless, all the species here included in *Anyphaena* share a basic body form. The neotropical genus *Wulfila* is used for all the pale, long-legged species, even though they are genitically quite diverse; the other genera used here are similarly construed. Although this system is not wholly satisfactory, it seems decidedly better than creating a host of new generic names that are likely

to fall into synonymy when a detailed generic revision of the group as a whole can be carried out.

METHODS

Tracheae were examined by dissecting away the dorsal cuticle of the abdomen and boiling the spider in ten percent sodium hydroxide for ten minutes. By this method, all the soft structures in the abdomen are digested away, leaving the tracheae intact.

Types of the new species are being deposited in the American Museum of Natural History, New York City, and the Museum of Comparative Zoology, Harvard University. Type depositories are abbreviated as follows: AMNH—American Museum of Natural History, BMNH—British Museum, Natural History, MCZ—Museum of Comparative Zoology.

Measurements and drawings were made with a standard ocular grid. Measurements of gross morphological features are accurate to ± 0.04 mm; measurements of ocular features are accurate to ± 0.01 mm. Rather than selecting a small number of measurements and providing means and standard deviations for these on the basis of a small series of specimens, one male and one female of each species were measured in detail. As only one of the species included here shows any significant variation in size, this procedure was deemed more informative. Actual measurements are given rather than ratios since in many cases (e.g., *Anyphaena catalina* and *A. arbida*) closely related species differ significantly in size but not in their relative proportions. Most of the measurements taken are self-explanatory, though a few need further comment. Cephalic width refers to the width of the carapace at a point just behind the posterior median eyes, and thus provides an indication of the degree to which the carapace is narrowed in front.

The difficult problem of accurately describing the eye relationships has been

solved by providing a set of measurements from which it is possible to reconstruct, using graph paper, the exact eye arrangement. Diameters are given using the conventional abbreviations (AME = anterior median eye, ALE = anterior lateral eye, PME = posterior median eye, PLE = posterior lateral eye). The length of each eye row is measured from the lateral edge of one lateral eye to the lateral edge of the other lateral eye. Curvature of the eye rows is described as viewed frontally, not dorsally. This was accomplished by positioning the spider in sand, a technique found most useful for making all the measurements. The dimensions of the median ocular quadrangle (MOQ) are given, as well as the distances between each of the eyes. The latter measurements extend between the edges of the lenses of the eyes under consideration (not just between the dark circles surrounding each eye).

The relative length and thickness of each leg is indicated by the tibial length index—the tibial width divided by the tibial length, with the result multiplied by 100 to obtain a whole number. All tibial measurements were taken from a dorsal view and refer to the maximum lengths and widths. The lower the tibial index, the longer and thinner the leg; conversely, the higher the index, the shorter and thicker the leg. In practice the index varies from around 3 to 35.

Ventral spination of the leg segments is indicated by the standard formula in which the number of spines on the proximal, median and distal thirds of the leg segment are given. Only ventral spines, not lateral ones, are included, and any even number in the formula may be taken to represent a pair of spines. Unless the last number is followed by an asterisk, the last pair of spines is terminally located. Thus, for example, the formula 2-2-2° indicates that the segment bears three pairs of ventral spines, the last pair of which is not terminally located. The term "spine" is used in

its conventional arachnological sense and refers to the movable macrosetae found on the legs. Similarly, the term "clypeus" is used to refer to the area between the anterior eye row and the anterior edge of the carapace and not to the small sclerite folded under the carapace. Since neither usage of the term reflects certain knowledge of homology with the insect clypeus, the old and established usage should be maintained.

Scale lines for the drawings always equal 0.1 mm. Each scale line applies to all consecutively numbered drawings until a new scale line appears. Exceptions are noted in the captions.

TAXONOMY

Anyphaenidae

Anyphaenidae Bertkau, 1878, Arch. Naturg., 44: 358, 379. Type genus *Anyphaena* Sundevall, 1833.

Amaurobioididae Hickman, 1949, Pap. Proc. Roy. Soc. Tasmania, 1948: 31. Type genus *Amaurobioides* O.P.-Cambridge, 1883. NEW SYNONYMY.

Diagnosis. The combination of the advanced tracheal spiracle and the lamelliform claw tufts will serve to distinguish the anyphaenids from all other families.

Description. Chelicerae diaxial, not fused together at base. Labium free. Without cribellum or calamistrum. With one pair of book lungs and a tracheal spiracle located considerably anterior to the spinnerets, most often midway between spinnerets and epigastric furrow, sometimes closer to one or the other. Eight eyes in two rows. Six spinnerets, anterior spinnerets approximate, colulus represented only by hairs, anal tubercle unmodified. Legs prograde, metatarsi and tarsi I and II scopulate, tarsi with two toothed claws and claw tufts composed of lamelliform setae.

KEY TO GENERA IN AMERICA NORTH OF MEXICO

- 1a. Tracheal spiracle much closer to epigastric furrow than to spinnerets *Ayshla*

- 1b. Tracheal spiracle roughly midway between epigastric furrow and spinnerets 2
- 2a. Legs very long and thin. Leg I greatly elongated, tibial index (width/length \times 100) usually 5 or less *Wulfila*
- 2b. Legs normal, tibial index of leg I usually 8 or more 3
- 3a. Chelicerae with 2 retromarginal teeth *Oxysoma*
- 3b. Chelicerae with 4-9 retromarginal denticles 4
- 4a. Carapace usually with two dark paramedian longitudinal bands; chelicerae not produced forward; femora not much darker than other leg segments *Anyphaena*
- 4b. Carapace without dark paramedian longitudinal bands; either chelicerae produced forward or femora much darker than other leg segments *Teudis*

***Anyphaena* Sundevall**

Anyphaena Sundevall, 1833, *Conspectus Arachn.*, 28. Type species by monotypy *Aranca accentuata* Walckenaer, 1802.

Diagnosis. The combination of the following characters will serve to distinguish the genus in America north of Mexico: tracheal spiracle roughly midway between epigastric furrow and spinnerets, leg I not greatly elongated, chelicerae with 4-9 retromarginal denticles and not produced forward, femora not much darker than other leg segments. The carapace usually has two dark paramedian longitudinal bands. The genus is used here in a very broad sense; this prevents simple diagnosis, and makes detailed descriptions of each species group more meaningful than a description of the whole genus.

Uncertain names. Types of the following species were unavailable and are too poorly described to permit identification: *Clubiona agrestis* Hentz, 1847, type destroyed; *Clubiona fallens* Hentz, 1847, type destroyed; *Clubiona subflurida* Hentz, 1847, type destroyed; *Anyphaena argentata* Becker, 1879, type lost; and *Anyphaena striata* Becker, 1879, type lost. The three Hentz *Clubiona* species were transferred to *Anyphaena* by Marx (1890), but there is little justification for this in the vague

descriptions. All the above names are regarded as *nomina dubia*.

Species groups. Although there seem to be several species groups of *Anyphaena* in the Neotropic region, only four occur north of Mexico. The *celer* group is the largest; it has representatives at least as far south as Panama and probably contains over thirty species. The *pectorosa* and *pacifica* groups are closely related and occur commonly in Mexico as well as the United States; it is difficult to place females in one group or the other unless the male is also known; they probably contain together at least twenty species. The *accentuata* group is predominantly Palearctic and probably contains at least five species.

KEY TO SPECIES GROUPS

- 1a. Metatarsi I and II with one pair of ventral spines *accentuata* group
- 1b. Metatarsi I and II with two pairs of ventral spines 2
- 2a. Retrolateral tibial apophysis of males bifid, with ventral prong elongated (Figs. 18-20, 25-32). Epigynum of females with a hood (Figs. 21, 23, 33, 36, 37, 39-42) .. *celer* group
- 2b. Retrolateral tibial apophysis of males not bifid or elongated (Figs. 55-58, 69-71). Epigynum without a hood (Figs. 66, 67, 72, 74, 77, 79) 3
- 3a. Eastern United States. Coxae III and IV of males with pointed spurs (Figs. 59-62). Female epigyna on broad sclerotized plates (Figs. 74, 77, 79); internal genitalia lacking long ducts (Figs. 75, 78, 80) *pectorosa* group
- 3b. Western United States. Coxae III and IV of males without pointed spurs, though rounded knobs may be present. Female epigyna not on broad sclerotized plates (Figs. 66, 67, 72); internal genitalia with long, sometimes coiling, ducts (Figs. 68, 73, 76) *pacifica* group

ANYPHAENA CELER GROUP

Diagnosis. Males of the *celer* group may be recognized by their retrolateral tibial apophysis, which is usually bifid with an elongated ventral prong (Figs. 18, 20, 26). Females have a characteristic epigynum consisting of a hood, two sidepieces and a midpiece (Figs. 9, 33), though the mid-

piece is reduced in *A. crebrispina* and *A. dixiana* (Figs. 21, 23).

Description. Total length 3–7 mm, with males of most species between 3.3–4.6 mm, females of most species between 4.1–5.9 mm. Carapace longer than wide, narrowed in front to less than half its maximum width. Clypeus height greater than anterior median eye diameter. Posterior median, posterior lateral and anterior lateral eyes subequal in size, larger than anterior medians. Procurved posterior eye row longer than recurved anterior row. Median ocular quadrangle longer than wide in front, wider than long in back. Anterior median eyes separated by their diameter, by their radius from anterior laterals. Posterior medians separated by their diameter, slightly closer to posterior laterals than to each other. Anterior laterals separated by their radius from posterior laterals. Sternum longer than wide, unmodified. Chelicerae with 4–5 promarginal teeth and 6–9 retromarginal denticles. Abdomen longer than wide, tracheal spiracle midway between epigastric furrow and base of spinnerets. Leg formula 1423. Metatarsi I and II with two pairs of ventral spines. Males often with femur III thickened distally, set with stiff short setae ventrally; tibia III ventral spines thickened, cone-like; coxae set with clumps of stiff short setae. Palpus with an elongated median apophysis, retrolateral tegular apophysis, conspicuous curving embolus and conductor. Retrolateral tibial apophysis bifid, with dorsal prong reduced in some species. Epigynum with hood, two sidepieces and midpiece; two simple spermathecae.

Variation. None of the species in this group show any significant individual or geographic intraspecific variation in structure, size or coloration.

KEY TO SPECIES

1a. Dorsal and ventral prongs of retrolateral tibial apophysis (RTA) roughly equal in length (Figs. 18, 19); epigynal hood wide, more than four times the minimum width

of epigynal sidepiece (Figs. 9, 11); eastern U.S. _____ 2

1b. Ventral prong of retrolateral tibial apophysis (RTA) much longer than dorsal prong (as in Figs. 26, 27); epigynal hood narrow, less than four times the minimum width of epigynal sidepiece (as in Figs. 33, 36); western U.S. _____ 3

2a. Dorsal prong of RTA broad, with a translucent ridge (Fig. 18); epigynal hood a thick oval, sidepieces straight (Fig. 9) _____ *celer*

2b. Dorsal prong of RTA narrow, without a translucent ridge (Fig. 19); epigynal hood a thin oval, sidepieces rounded (Fig. 11) _____ *maculata*

3a. Base of RTA expanded into a broad triangle (Fig. 20); retrolateral tegular apophysis prolonged medially (Fig. 3); epigynal sidepieces more than three times the width of epigynal hood (Fig. 21) _____ *crebrispina*

3b. Base of RTA not expanded; retrolateral tegular apophysis not prolonged medially; epigynal sidepieces less than three times the width of epigynal hood _____ 4

4a. Dorsal prong of RTA bearing a sharp spur (Fig. 25); epigynal midpiece greatly reduced, sidepieces widely separated posteriorly (Fig. 23) _____ *dixiana*

4b. Dorsal prong of RTA without a spur; epigynal midpiece conspicuous, sidepieces approximate posteriorly _____ 5

5a. Males _____ 6

5b. Females _____ 14

6a. Dorsal prong of RTA with two triangular processes separated by a concave notch (Fig. 26) _____ *judicata*

6b. Dorsal prong of RTA without triangular processes _____ 7

7a. Dorsal prong of RTA with a long recurved hook (Fig. 29) _____ *autumnus*

7b. Dorsal prong of RTA without a long recurved hook _____ 8

8a. Dorsal prong of RTA with a basal hook (Figs. 31, 38) _____ 9

8b. Dorsal prong of RTA without a basal hook _____ 10

9a. Conductor and retrolateral tegular apophysis recurved (Fig. 15) _____ *catalina*

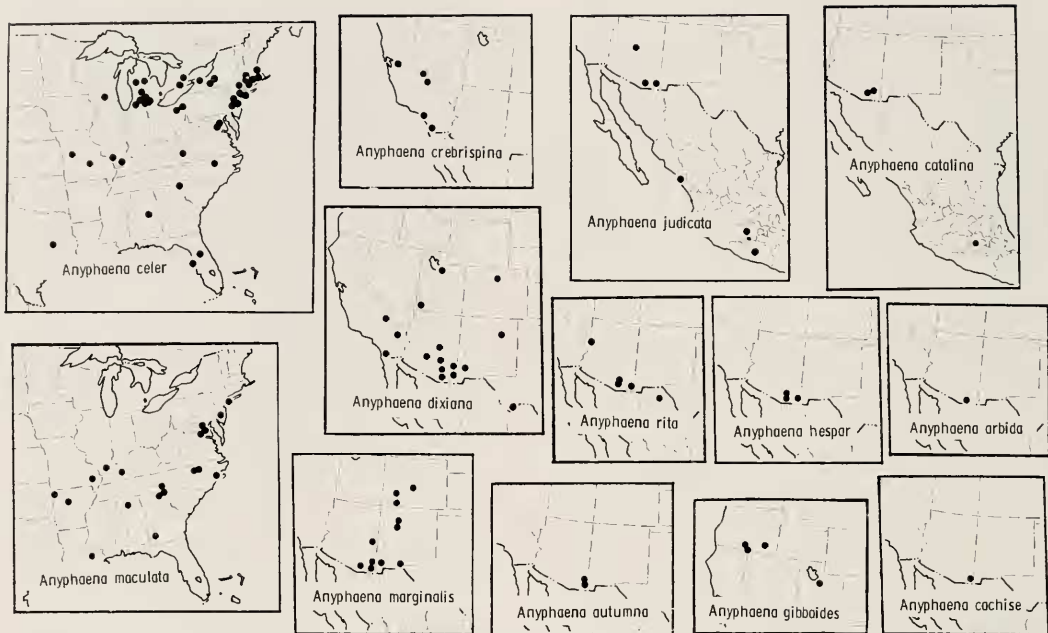
9b. Conductor and retrolateral tegular apophysis not recurved (Fig. 17) _____ *arbida*

10a. Dorsal prong of RTA a sharply pointed spike (Fig. 32) _____ *hesper*

10b. Dorsal prong of RTA not a sharply pointed spike _____ 11

11a. Embolus with a conspicuous enlargement (Figs. 7, 13) _____ 12

11b. Embolus without a conspicuous enlargement (Figs. 21, 33) _____ 13



Map 1. Distributions of *Anyphaena arbida*, *A. autumnna*, *A. catalina*, *A. celer*, *A. cochise*, *A. crebrispina*, *A. dixiana*, *A. gibboides*, *A. hespar*, *A. judicata*, *A. maculata*, *A. marginalis* and *A. rita*.

- 12a. Dorsal prong of RTA more than half the length of ventral prong (Fig. 35) *cochise*
 - 12b. Dorsal prong of RTA less than half the length of ventral prong (Fig. 28) *rita*
 - 13a. Median apophysis sharply pointed; conductor short, bent (Fig. 14); Oregon and Utah *gibboides*
 - 13b. Median apophysis rounded; conductor long, straight (Fig. 6); Arizona and New Mexico *marginalis*
 - 14a. Epigynal hood wider than long; midpiece not wider than hood, without constrictions; sidepieces very wide (Fig. 40); Oregon and Utah *gibboides*
 - 14b. Epigynal hood as long as wide or midpiece wider than hood or sidepieces narrow; Arizona and New Mexico 15
 - 15a. Epigynal midpiece a very broad triangle (Fig. 37) *rita*
 - 15b. Epigynal midpiece otherwise 16
 - 16a. Spermathecae much further apart posteriorly than anteriorly (Fig. 49) *hespar*
 - 16b. Spermathecae as far apart anteriorly as posteriorly 17
 - 17a. Epigynal hood much wider than long (Fig. 39) *autumnna*
 - 17b. Epigynal hood as long as wide 18
 - 18a. Epigynal midpiece less than twice the length of epigynal hood (Fig. 41) *catalina*
 - 18b. Epigynal midpiece more than twice the length of epigynal hood 19
 - 19a. Epigynal midpiece a short triangle (Fig. 33) *judicata*
 - 19b. Epigynal midpiece an elongate triangle (Fig. 36) *marginalis*
- Anyphaena celer* (Hentz)**
Map 1; Figures 1, 9, 10, 18
- Clubiona celer* Hentz, 1847, J. Boston Soc. Natur. Hist., 5: 452, pl. 23, fig. 20 (♀). Male holotype, female allotype from Alabama and North Carolina in the Boston Soc. Natur. Hist. (Boston Museum of Science), destroyed by beetles.
- Anyphaena incerta* Keyserling, 1887, Verh. zool. bot. Ges. Wien, 37: 452, pl. 6, fig. 22 (♀). Female holotype from Cambridge, Massachusetts, in MCZ, examined. Emerton, 1890, Trans. Connecticut Acad. Sci., 8: 186, pl. 6, figs. 2-2d, ♂, ♀.
- Anyphaena celer*, Simon, 1897, Hist. Natur. Araign., 2: 96. Bryant, 1931, Psyche, 38: 111, pl. 6, fig. 9, pl. 8, figs. 25, 28, ♂, ♀. Chickering, 1939, Pap. Michigan Acad. Sci., 24: 51, figs.

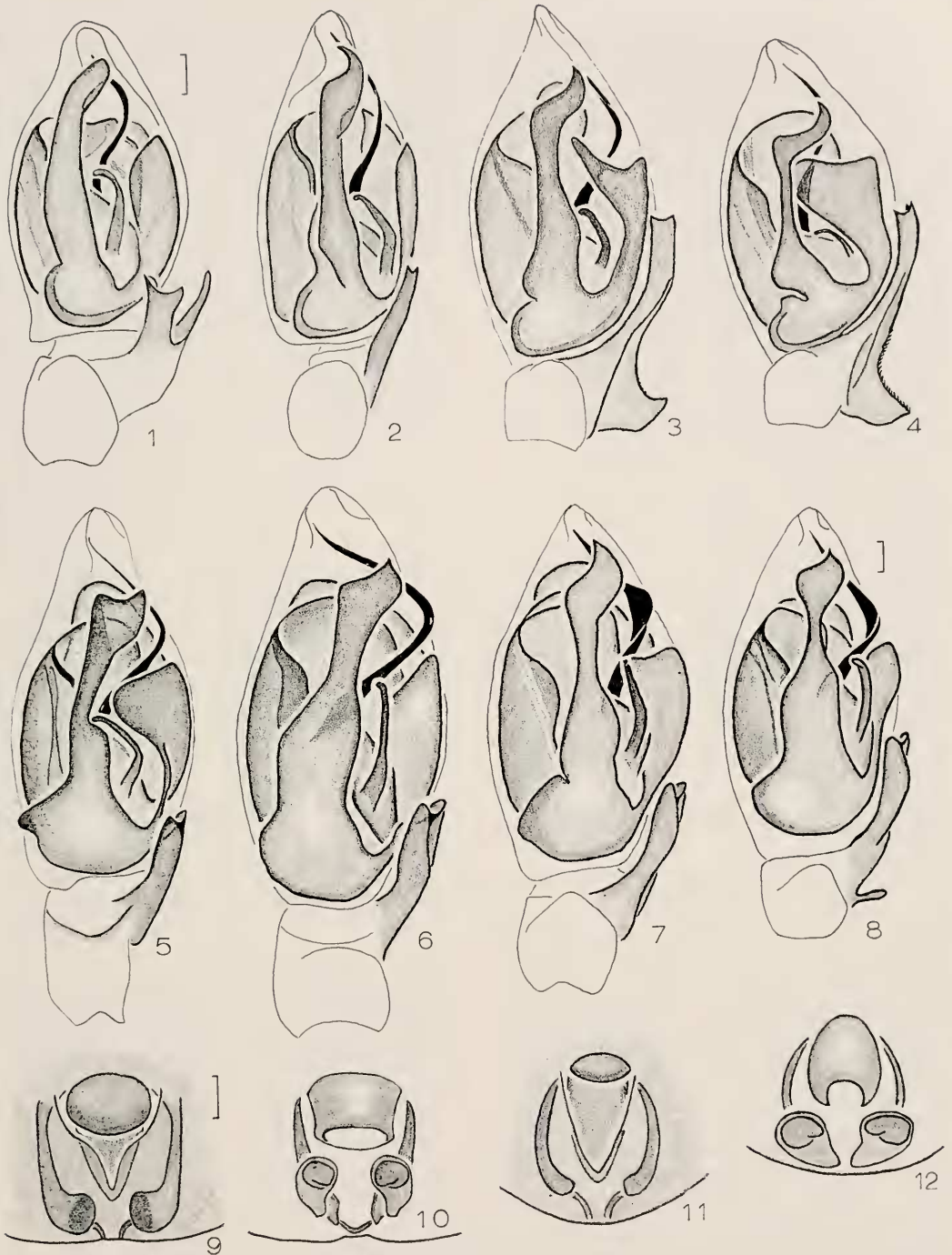


Plate 1

Figures 1-8. Left palpi, ventral view. Figures 9, 11. Epigyna, ventral view. Figures 10, 12. Internal genitalia, dorsal view. 1, 9, 10. *Anyphaena celer* (Hentz). 2, 11, 12. *Anyphaena maculata* (Banks). 3. *Anyphaena credispina* Chamberlin. 4. *Anyphaena dixiana* (Chamberlin and Woodbury). 5. *Anyphaena judicata* O. P.-Cambridge. 6. *Anyphaena marginalis* (Banks). 7. *Anyphaena rita* new species. 8. *Anyphaena autumnna* new species.

1-4, ♂, ♀. Comstock, 1940, Spider Book, rev. ed., p. 577, figs. 634-635, ♂, ♀. Kaston, 1948, Bull. Connecticut Geol. Natur. Hist. Surv., 70: 407, figs. 1471-1476, ♂, ♀. Roewer, 1954, Katalog der Araneae, 2:528. Bonnet, 1955, Bibliographia Araneorum, 2: 343.

Gayenna celer, Comstock, 1912, Spider Book, p. 563, figs. 634-635, ♂, ♀.

Diagnosis. *Anyphaena celer* is most closely related to *A. maculata*. Males of both species have dorsal and ventral RTA prongs roughly equal in length, but *A. celer* males may be distinguished by the translucent ridge on their dorsal prong (Fig. 18). Females may be separated by the straight epigynal sidepieces and widely oval epigynal hood of *A. celer* (Fig. 9).

Male (Jackson Co., Illinois). Total length 4.54 mm. Carapace 2.12 mm long, 1.58 mm wide, cephalic width 0.83 mm, clypeus height 0.07 mm, pale yellow with thin dark broken border and two dark paramedian longitudinal bands. Eyes: diameters (mm): AME 0.06, ALE 0.12, PME 0.11, PLE 0.12; anterior eye row 0.44 mm long, slightly recurved; posterior eye row 0.60 mm long, procurved; MOQ length 0.24 mm, front width 0.19 mm, back width 0.31 mm; eye interdistances (mm): AME-AME 0.06, AME-ALE 0.03, PME-PME 0.10, PME-PLE 0.10, ALE-PLE 0.05.

Sternum 1.06 mm long, 0.94 mm wide, pale yellow with dark markings opposite coxae, translucent border and darkened extensions to coxae. Chelicerae 0.79 mm long with 4 promarginal teeth and 8 retro-marginal denticles, pale yellow with boss outlined in gray. Labium and endites pale yellow, darkest proximally; endites not invaginated.

Abdomen 2.30 mm long, 1.62 mm wide, pale white with transverse rows of dark markings; venter with scattered dark markings. Epigastric furrow 0.85 mm from tracheal spiracle, spiracle 0.88 mm from base of spinnerets.

Legs pale yellow with scattered dark markings. Tibial lengths (mm) and indices: I 1.98, 12; II 1.82, 14; III 1.17, 21;

IV 1.73, 16. Ventral spination: tibiae I-IV 2-2-2; metatarsi I, II 2-2-0, III 2-0-2, IV 2-2-2. Femur III thickened distally with clump of short thick setae ventrally. Tibia III ventral spines 1, 2 on retrolateral side thickened, cone-like. Coxae III, IV pro-lateral ventral surface with clump of short thick setae.

Palpus as in Figures 1, 18.

Female (Wayne Co., Ohio). Coloration as in male. Total length 5.87 mm. Carapace 2.07 mm long, 1.39 mm wide, cephalic width 0.86 mm, clypeus height 0.05 mm. Eyes: diameters (mm): AME 0.05, ALE 0.10, PME 0.10, PLE 0.10; anterior eye row 0.42 mm long, recurved; posterior eye row 0.58 mm long, procurved; MOQ length 0.30 mm, front width 0.19 mm, back width 0.32 mm; eye interdistances (mm): AME-AME 0.07, AME-ALE 0.05, PME-PME 0.12, PME-PLE 0.07, ALE-PLE 0.08.

Sternum 0.99 mm long, 0.88 mm wide. Chelicerae 0.76 mm long with teeth as in male.

Abdomen 4.10 mm long, 2.13 mm wide. Epigastric furrow 1.57 mm from tracheal spiracle, spiracle 1.37 mm from base of spinnerets.

Legs unmodified. Tibial lengths (mm) and indices: I 1.58, 15; II 1.42, 16; III 1.01, 24; IV 1.60, 15. Ventral spination: tibiae I, II 2-2-2, III, IV 1-1-2; metatarsi I, II 2-2-0, III 2-0-2, IV 2-2-2.

Epigynum as in Figure 9, internal genitalia as in Figure 10.

Natural history. Mature males have been taken every month except June, mature females year-round. Specimens have been taken in houses, deciduous forests, on leaves, flowers, treesides, in pitfalls and footprints in snow.

Distribution. Eastern United States from southern New England west to Wisconsin, south to Florida and Texas (Map 1).

Anyphaena maculata (Banks)

Map 1; Figures 2, 11, 12, 19

Gayenna maculata Banks, 1896, Trans. Amer. Ent. Soc., 23: 64. Male holotype from Washington, D.C., in MCZ, examined. Bishop and

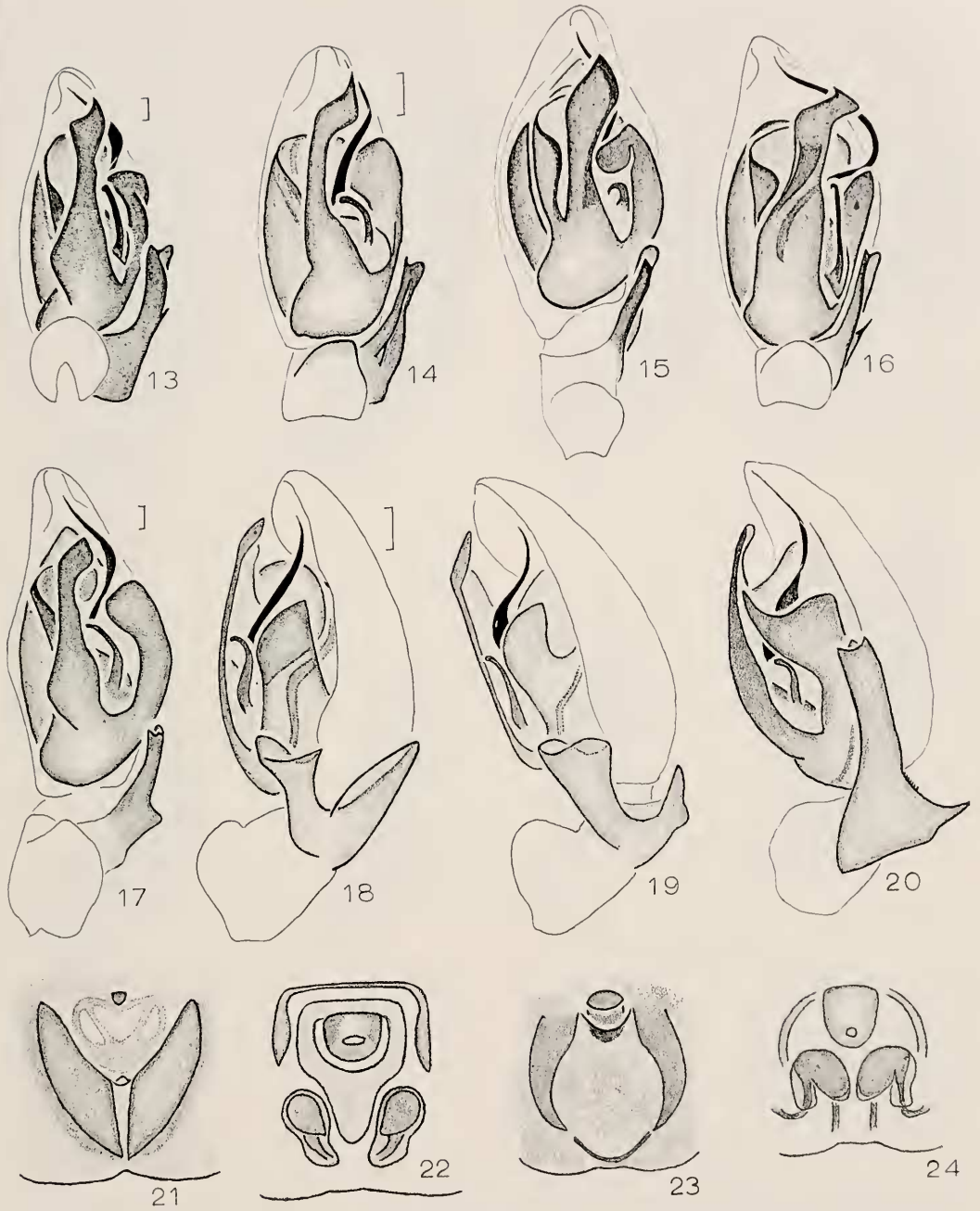


Plate 2

Figures 13-17. Left palpi, ventral view. Figures 18-20. Left palpi, retrolateral view. Figures 21, 23. Epigyna, ventral view. Figures 22, 24. Internal genitalia, dorsal view. 13. *Anyphaena cochise* new species. 14. *Anyphaena gibboides* new species. 15. *Anyphaena catalina* new species. 16. *Anyphaena hespar* new species. 17. *Anyphaena arbida* new species. 18. *Anyphaena celer* (Hentz). 19. *Anyphaena maculata* (Banks). 20, 21, 22. *Anyphaena crebrispina* Chamberlin. 23, 24. *Anyphaena dixiana* (Chamberlin and Woodbury).

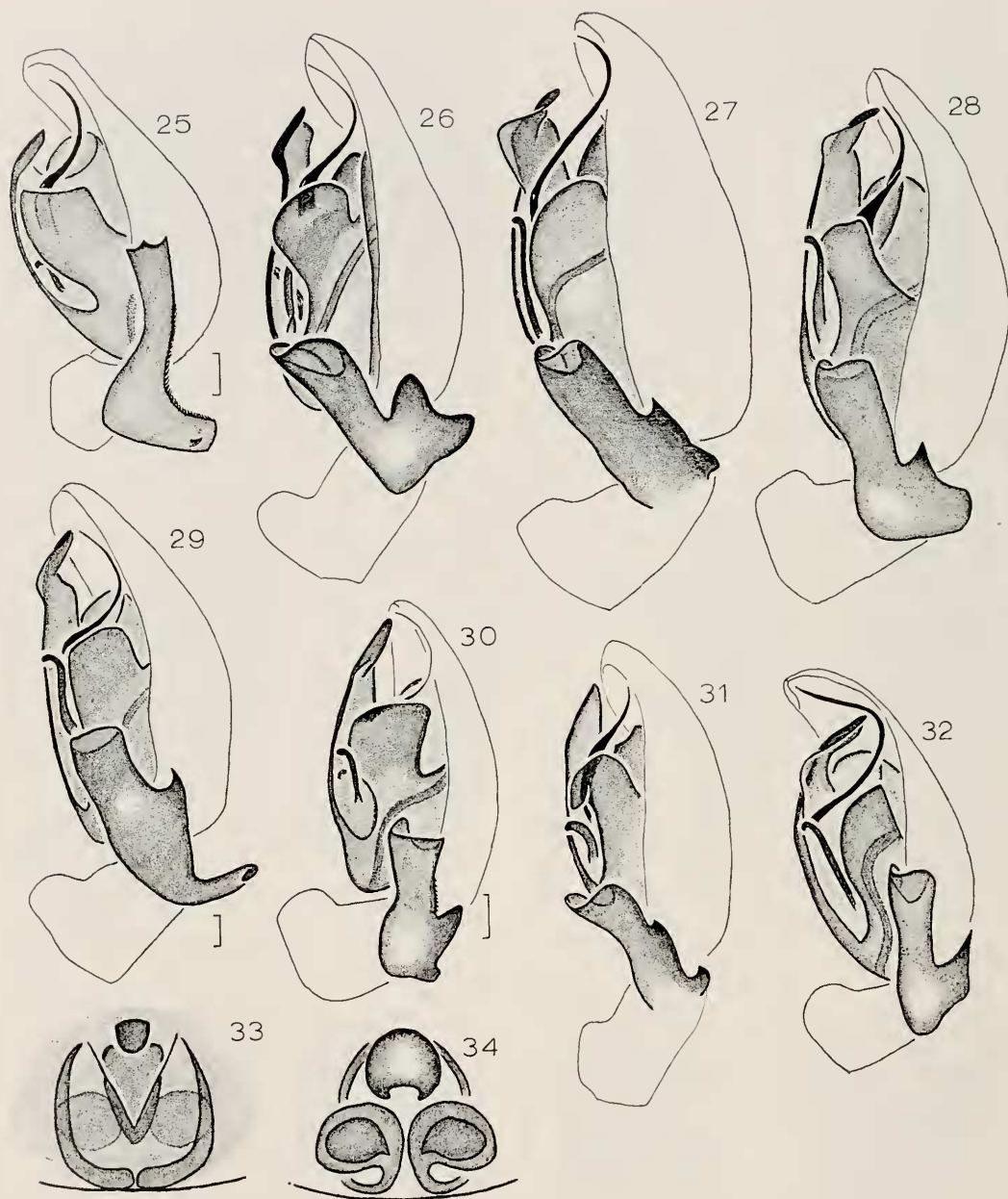


Plate 3

Figures 25-32. Left palpi, retrolateral view. Figure 33. Epigynum, ventral view. Figure 34. Internal genitalia, dorsal view. 25. *Anyphaena dixiana* (Chamberlin and Woodbury). 26, 33, 34. *Anyphaena judicata* O. P.-Cambridge. 27. *Anyphaena marginalis* (Banks). 28. *Anyphaena rita* new species. 29. *Anyphaena autumnna* new species. 30. *Anyphaena gibboides* new species. 31. *Anyphaena catalina* new species. 32. *Anyphaena hespar* new species.

Crosby, 1926, J. Elisha Mitchell Sci. Soc., 41: 189, pl. 24, figs. 37, 38, ♂, ♀.

Anyphaena maculata, Simon, 1897, Hist. Natur. Araign., 2: 96. Bryant, 1931, Psyche, 38: 111, pl. 6, fig. 8, pl. 8, fig. 31, ♂, ♀. Kaston, 1948, Bull. Connecticut Geol. Natur. Hist. Surv., 70: 409, figs. 1457-1458, ♂, ♀. Roewer, 1954, Katalog der Araneae, 2: 529. Bonnet, 1955, Bibliographia Araneorum, 2: 345.

Diagnosis. *Anyphaena maculata* is most closely related to *A. celer*. Males may be distinguished by the short dorsal prong of the RTA, which lacks a translucent ridge (Figure 19); females by their rounded epigynal sidepieces and narrowly oval epigynal hood (Figure 11).

Male (Durham Co., North Carolina). Coloration as in *Anyphaena celer*. Total length 3.74 mm. Carapace 2.09 mm long, 1.54 mm wide, cephalic width 0.77 mm, clypeus height 0.08 mm. Eyes: diameters (mm): AME 0.07, ALE 0.11, PME 0.10, PLE 0.10; anterior eye row 0.44 mm long, recurved; posterior eye row 0.58 mm long, procurved; MOQ length 0.23 mm, front width 0.20 mm, back width 0.31 mm; eye interdistances (mm): AME-AME 0.05, AME-ALE 0.03, PME-PME 0.10, PME-PLE 0.10, ALE-PLE 0.04.

Sternum 1.08 mm long, 0.79 mm wide. Chelicerae 0.63 mm long with 4 promarginal teeth and 8 retromarginal denticles.

Abdomen 2.02 mm long, 1.08 mm wide. Epigastric furrow 0.31 mm from tracheal spiracle, spiracle 0.41 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 2.00, 11; II 1.75, 13; III 1.12, 24; IV 1.82, 15. Ventral spination: tibiae I, II 2-2-2°, III, IV 2-2-2; metatarsi I 2-1-0, II 2-2-0, III 2-0-2, IV 2-2-2. Modifications of third leg as in *A. celer*.

Palpus as in Figures 2, 19.

Female (Pope Co., Illinois). Coloration as in male of *A. celer*.

Total length 4.68 mm. Carapace 2.07 mm long, 1.60 mm wide, cephalic width 0.97 mm, clypeus height 0.08 mm. Eyes: diameters (mm): AME 0.08, ALE 0.10, PME 0.10, PLE 0.11; anterior eye row 0.48

mm long, recurved; posterior eye row 0.63 mm long, procurved; MOQ length 0.30 mm, front width 0.22 mm, back width 0.33 mm; eye interdistances (mm): AME-AME 0.07, AME-ALE 0.04, PME-PME 0.14, PME-PLE 0.11, ALE-PLE 0.05.

Sternum 1.15 mm long and 0.95 mm wide. Chelicerae 0.71 mm long with teeth as in male.

Abdomen 3.02 mm long, 2.11 mm wide. Epigastric furrow 0.85 mm from tracheal spiracle, spiracle 0.90 mm from base of spinnerets.

Legs unmodified. Tibial lengths (mm) and indices: I 1.42, 18; II 1.48, 18; III 0.99, 25; IV 1.58, 16. Ventral spination: tibiae I, II 2-2-2°, III 1-1-2, IV 2-1-2; metatarsi I, II 2-2-0, III 2-0-2, IV 2-2-2.

Epigynum as in Figure 11, internal genitalia as in Figure 12.

Natural history. Mature males have been taken from late September through early February, mature females from mid-October through mid-April. Specimens have been taken from Spanish moss, by sweeping in bottomland pine and hardwood forests, by sifting leaves and by Malaise trap.

Distribution. Mid-eastern states from Long Island south to North Carolina, west to southern Illinois, eastern Missouri and northern Alabama (Map 1).

Anyphaena crebrispina Chamberlin

Map 1; Figures 3, 20, 21, 22

Anyphaena crebrispina Chamberlin, 1919, Pomona Coll. J. Ent. Zool., 12: 10, pl. 4, fig. 4 (♂). Male holotype from Claremont, California, in MCZ, examined. Bryant, 1931, Psyche, 38: 113, pl. 6, fig. 11, ♂. Roewer, 1954, Katalog der Araneae, 2: 528. Bonnet, 1955, Bibliographia Araneorum, 2: 343.

Anyphaena zina Chamberlin, 1919, Pomona Coll. J. Ent. Zool., 12: 11, pl. 4, fig. 5 (♀). Female holotype from Claremont, California, in MCZ, examined. Roewer, 1954, Katalog der Araneae, 2: 530. Bonnet, 1955, Bibliographia Araneorum, 2: 349. NEW SYNONYMY.

Diagnosis. *Anyphaena crebrispina* is the most aberrant member of the *celer* group, but is most closely related to *A. dixiana*.

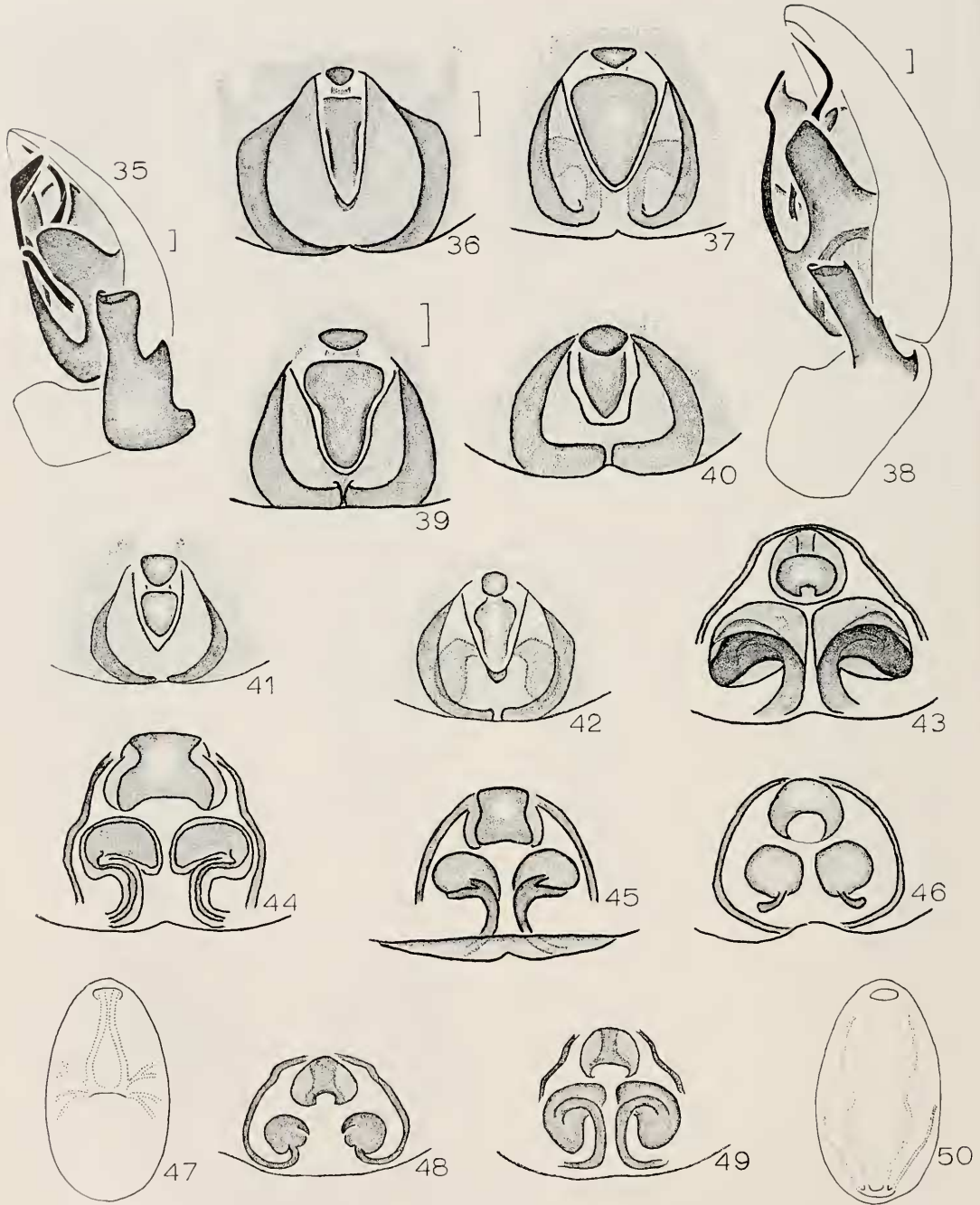


Plate 4

Figures 35, 38. Left palpi, retrolateral view. Figures 36, 37, 39-42. Epigyna, ventral view. Figures 43-46, 48, 49. Internal genitalia, dorsal view. Figure 47. Anyphaenid tracheae, diagrammatic. Figure 50. Clubionid tracheae, diagrammatic. 35. *Anyphaena cochise* new species. 36, 43. *Anyphaena marginalis* (Banks). 37, 44. *Anyphaena rita* new species. 38. *Anyphaena arbida* new species. 39, 45. *Anyphaena autumnna* new species. 40, 46. *Anyphaena gibboides* new species. 41, 48. *Anyphaena catalina* new species. 42, 49. *Anyphaena hespar* new species.

Males of *A. crebrispina* may be readily distinguished by the greatly expanded base of the RTA (Fig. 20). If this species were known solely from the female, it would be impossible to place it in the *celer* group: the epigynum, with its greatly expanded sidepieces and its lack of an externally visible midpiece, is totally unlike that of any other species in this group (Fig. 21).

Male (Los Angeles Co., California). Coloration as in *Anyphaena celer*. Total length 4.61 mm. Carapace 2.00 mm long, 1.57 mm wide, cephalic width 0.74 mm, clypeus height 0.10 mm. Eyes: diameters (mm): AME 0.07, ALE 0.10, PME 0.10, PLE 0.10; anterior eye row 0.43 mm long, recurved; posterior eye row 0.56 mm long, procurved; MOQ length 0.25 mm, front width 0.18 mm, back width 0.29 mm; eye interdistances (mm): AME-AME 0.04, AME-ALE 0.02, PME-PME 0.09, PME-PL 0.09, ALE-PL 0.04.

Sternum 1.10 mm long, 0.88 mm wide. Chelicerae 0.55 mm long with 5 promarginal teeth and 8 retromarginal denticles.

Abdomen 2.65 mm long, 1.58 mm wide. Epigastric furrow 0.79 mm from tracheal spiracle, spiracle 0.68 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 1.69, 13; II 1.51, 15; III 1.06, 22; IV 1.69, 14. Ventral spination: tibiae I 2-2-2°, II 1-2-2°, III 1-2-2, IV 2-2-2; metatarsi I, II 2-2-0, III 2-0-2, IV 2-2-2. Modifications of third leg as in *A. celer*.

Palpus as in Figures 3, 20.

Female (Los Angeles Co., California). Coloration as in male of *A. celer*. Total length 4.39 mm. Carapace 1.85 mm long, 1.37 mm wide, cephalic width 0.77 mm, clypeus height 0.08 mm. Eyes: diameters (mm): AME 0.07, ALE 0.09, PME 0.09, PLE 0.09; anterior eye row 0.41 mm long, recurved; posterior eye row 0.56 mm long, procurved; MOQ length 0.23 mm, front width 0.18 mm, back width 0.28 mm; eye interdistances (mm): AME-AME 0.04, AME-ALE 0.02, PME-PME 0.10, PME-PL 0.08, ALE-PL 0.04.

Sternum 1.08 mm long, 0.86 mm wide. Chelicerae 0.64 mm long with 4 promarginal teeth and 9 retromarginal denticles.

Abdomen 2.99 mm long, 1.98 mm wide. Epigastric furrow 0.95 mm from tracheal spiracle, spiracle 0.90 mm from base of spinnerets.

Legs unmodified. Tibial lengths (mm) and indices: I 1.39, 15; II 1.31, 16; III 0.75, 28; IV 1.44, 14. Ventral spination: tibiae I 2-2-2°, II 1-2-0, III 1-1-0, IV 1-1-2; metatarsi as in male.

Epigynum as in Figure 21, internal genitalia as in Figure 22.

Natural history. Mature males have been taken in November, mature females from early December through late April. Specimens have been taken by Berlese funnel sampling of grape bark.

Distribution. Central and southern California (Map 1).

Anyphaena dixiana (Chamberlin and Woodbury), new combination
Map 1; Figures 4, 23, 24, 25

Gayenna dixiana Chamberlin and Woodbury, 1929, Proc. Biol. Soc. Washington, 42: 138, pl. 1, fig. 3 (♀). Female holotype from St. George, Utah, in AMNH, examined. Roewer, 1954, Katalog der Araneae, 2: 540 (*G. dixiana* [sic]). Bonnet, 1957, Bibliographia Araneorum, 2: 1977.

Anyphaena coloradensis Bryant, 1931, Psyche, 38: 112, pl. 6, figs. 9, 10, pl. 7, figs. 30, 33 (♂, ♀). Male holotype, female allotype from Boulder, Colorado, in MCZ, examined. Roewer, 1954, Katalog der Araneae, 2: 528. Bonnet, 1955, Bibliographia Araneorum, 2: 343. NEW SYNONYMY.

Diagnosis. This distinctive species is closest to *Anyphaena crebrispina*, but may be quickly recognized by the spur borne on the dorsal prong of the RTA of males (Fig. 25) and the greatly reduced epigynal midpiece of females (Fig. 23).

Male (Cochise Co., Arizona). Coloration as in *Anyphaena celer* except that posterior spinnerets have dorsal surface sharply divided into dark brown lateral and pale orange median halves.

Total length 3.85 mm. Carapace 1.67

mm long, 1.44 mm wide, cephalic width 0.65 mm, clypeus height 0.07 mm. Eyes: diameters (mm): AME 0.06, ALE 0.09, PME 0.09, PLE 0.10; anterior eye row 0.39 mm long, recurved; posterior eye row 0.51 mm long, procurved; MOQ length 0.25 mm, front width 0.16 mm, back width 0.26 mm; eye interdistances (mm): AME-AME 0.04, AME-ALE 0.03, PME-PME 0.08, PME-PLE 0.08, ALE-PLE 0.05.

Sternum 0.96 mm long, 0.76 mm wide. Chelicerae 0.53 mm long with 4 promarginal teeth and 6 retromarginal denticles. Endites slightly invaginated at middle.

Abdomen 2.56 mm long, 1.49 mm wide. Epigastric furrow 0.76 mm from tracheal spiracle, spiracle 0.76 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 1.69, 11; II 1.37, 14; III 0.81, 28; IV 1.44, 16. Ventral spination: tibiae I, II 2-2-2*, III, IV 1-2-2; metatarsi I, II 2-2-0, III 2-0-2, IV 2-2-2. Modifications of third leg as in *A. celer*.

Palpus as in Figures 4, 25.

Female (Cochise Co., Arizona). Coloration as in male. Total length 4.14 mm. Carapace 2.03 mm long, 1.57 mm wide, cephalic width 0.86 mm, clypeus height 0.09 mm. Eyes: diameters (mm): AME 0.05, ALE 0.08, PME 0.09, PLE 0.10; anterior eye row 0.43 mm long, recurved; posterior eye row 0.60 mm long, procurved; MOQ length 0.26 mm, front width 0.20 mm, back width 0.32 mm; eye interdistances (mm): AME-AME 0.09, AME-ALE 0.05, PME-PME 0.15, PME-PLE 0.09, ALE-PLE 0.07.

Sternum 1.15 mm long, 0.86 mm wide. Chelicerae 0.71 mm long with 5 promarginal teeth and 8 retromarginal denticles.

Abdomen 2.50 mm long, 1.69 mm wide. Epigastric furrow 0.60 mm from tracheal spiracle, spiracle 0.67 mm from base of spinnerets.

Legs unmodified. Tibial lengths (mm) and indices: I 1.46, 16; II 1.33, 17; III 0.94, 24; IV 1.49, 17. Ventral spination as in male.

Epigynum as in Figure 23, internal genitalia as in Figure 24.

Natural history. Mature males have been taken from mid-August through mid-May, mature females from late September through late April. Specimens have been taken from 5400 to 9000 feet (1650-2750 m), in yellow pine/oak and montane forests, in alfalfa, under dead agave and frequently in houses.

Distribution. Northcentral Colorado south to western Texas, west to southern California (Map 1).

Anyphaena judicata O. P.-Cambridge
Map 1; Figures 5, 26, 33, 34

Anyphaena judicata O. P.-Cambridge, 1896, *Biologia Centrali Americana*, Aran., 1: 203, pl. 26, fig. 4 (♂). Male holotype from Omiltemi, Guerrero, Mexico, in BMNH, examined. F. O. P.-Cambridge, 1900, *Biologia Centrali Americana*, Aran., 2: 96, pl. 7, fig. 9, ♂. Roewer, 1954, *Katalog der Araneae*, 2: 525. Bonnet, 1955, *Bibliographia Araneorum*, 2: 345.

Diagnosis. *Anyphaena judicata* is most closely related to an unnamed Mexican species (or group of species) and has no close relatives among the species occurring north of Mexico. Males may be easily recognized by the distinctive form of the dorsal prong of the RTA (Fig. 26). The female epigynum is closest to that of *A. marginalis*, but the midpiece is proportionately shorter and wider and the sidepieces are narrower and diminish in width anteriorly smoothly, without the sharp decrease in width shown by *A. marginalis* (Fig. 33).

Male (Cochise Co., Arizona). Coloration as in *Anyphaena celer*, except that posterior spinnerets have entire dorsal surface dark brown.

Total length 3.46 mm. Carapace 1.76 mm long, 1.44 mm wide, cephalic width 0.68 mm, clypeus height 0.09 mm. Eyes: diameters (mm): AME 0.06, ALE 0.10, PME 0.09, PLE 0.10; anterior eye row 0.40 mm long, recurved; posterior eye row 0.52 mm long, procurved; MOQ length 0.26 mm, front width 0.17 mm, back width

0.28 mm; eye interdistances (mm): AME-AME 0.05, AME-ALE 0.03, PME-PME 0.11, PME-PLE 0.06, ALE-PLE 0.04.

Sternum 0.95 mm long, 0.68 mm wide. Chelicerae 0.56 mm long with 4 promarginal teeth and 7 retromarginal denticles.

Abdomen 1.80 mm long, 1.15 mm wide. Epigastric furrow 0.61 mm from tracheal spiracle, spiracle 0.63 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 2.25, 6; II 1.93, 8; III 1.01, 21; IV 1.66, 11. Ventral spination: tibiae I 4-2-2°, II 3-2-2°, III 1-2-0, IV 1-1-2; metatarsi I, II, 2-2-0, III 2-0-2; IV 1-2-2. Femur III unmodified. Tibia III ventral spine 1 on retrolateral side missing, ventral spine 2 thickened, cone-like. Coxae I, II and III (but not IV) with a small number of short, thick setae. Coxae III with a tubercule.

Palpus as in Figures 5, 26.

Female (Cochise Co., Arizona). Coloration as in male.

Total length 4.72 mm. Carapace 1.76 mm long, 1.37 mm wide, cephalic width 0.81 mm, clypeus height 0.06 mm. Eyes: diameters (mm): AME 0.07, ALE 0.10, PME 0.10, PLE 0.10; anterior eye row 0.44 mm long, recurved; posterior eye row 0.60 mm long, procurved; MOQ length 0.29 mm, front width 0.21 mm, back width 0.32 mm; eye interdistances (mm): AME-AME 0.07, AME-ALE 0.03, PME-PME 0.13, PME-PLE 0.09, ALE-PLE 0.05.

Sternum 0.97 mm long, 0.77 mm wide. Chelicerae 0.58 mm long with teeth as in male.

Abdomen 3.13 mm long, 2.09 mm wide. Epigastric furrow 1.21 mm from tracheal spiracle, spiracle 1.31 mm from base of spinnerets.

Legs unmodified. Tibial lengths (mm) and indices: I 1.69, 11; II 1.31, 14; III 0.88, 23; IV 1.66, 12. Ventral spination as in male.

Epigynum as in Figure 33, internal genitalia as in Figure 34.

Natural history. Mature males have been taken from mid-June through mid-August,

mature females from late March to November, most in July and August. Specimens have been taken from 5100 to 8000 feet (1550-2450 m), by sweeping and under rocks.

Distribution. Arizona south to Guerrero, Mexico (Map 1).

Anyphaena marginalis (Banks),
new combination

Map 1; Figures 6, 27, 36, 43

Gayenna marginalis Banks, 1901, Proc. Acad. Natur. Sci. Philadelphia, 53: 574, pl. 23, fig. 22 (♀). Female holotype from Beulah, San Miguel Co., New Mexico, was probably deposited in the MCZ along with the other types from this paper but was not found by Bryant when the MCZ types were cataloged; lost, presumed destroyed. Roewer, 1954, Katalog der Araneae, 2: 540. Bonnet, 1957, Bibliographia Araneorum, 2: 1978.

Diagnosis. *Anyphaena marginalis* is most closely related to *A. hespar*, both species having a simple embolus and elongated conductor. Males of *A. marginalis* (Fig. 27), however, do not have the spine-like dorsal prong of the RTA of *A. hespar*, and females of *A. marginalis* (Fig. 36) do not have the conspicuous bulge in the epigynal midpiece which characterizes *A. hespar* females.

Male (Graham Co., Arizona). Coloration as in *Anyphaena celer*.

Total length 3.78 mm. Carapace 1.98 mm long, 1.60 mm wide, cephalic width 0.72 mm, clypeus height 0.09 mm. Eyes: diameters (mm): AME 0.06, ALE 0.10, PME 0.08, PLE 0.10; anterior eye row 0.40 mm long, straight; posterior eye row 0.55 mm long, procurved; MOQ length 0.20 mm, front width 0.17 mm, back width 0.28 mm; eye interdistances (mm): AME-AME 0.05, AME-ALE 0.02, PME-PME 0.11, PME-PLE 0.08, ALE-PLE 0.04.

Sternum 1.13 mm long, 0.81 mm wide. Chelicerae 0.54 mm long with 5 promarginal teeth and 6 retromarginal denticles.

Abdomen 2.00 mm long, 1.33 mm wide. Epigastric furrow 0.52 mm from tracheal

spiracle, spiracle 0.59 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 1.67, 13; II 1.35, 16; III 1.03, 26; IV 1.62, 14. Ventral spination: tibiae I 4-2-2*, II 2-2-2*, III, IV 1-2-2; metatarsi I, II 2-2-0, III 2-0-2, IV 2-2-2. Femur III unmodified. Tibia III ventral spine 1 on retrolateral side missing. Coxae unmodified.

Palpus as in Figures 6, 27.

Female (Graham Co., Arizona). Coloration as in male of *A. celer*.

Total length 4.26 mm. Carapace 2.11 mm long, 1.55 mm wide, cephalic width 0.86 mm, clypeus height 0.08 mm. Eyes: diameters (mm): AME 0.07, ALE 0.10, PME 0.11, PLE 0.10; anterior eye row 0.44 mm long, straight; posterior eye row 0.64 mm long, procurved; MOQ length 0.30 mm, front width 0.19 mm, back width 0.33 mm; eye interdistances (mm): AME-AME 0.05, AME-ALE 0.03, PME-PME 0.12, PME-PLE 0.09, ALE-PLE 0.06.

Sternum 1.05 mm long, 0.80 mm wide. Chelicerae 0.65 mm long with 4 promarginal teeth and 8 retromarginal denticles.

Abdomen 2.52 mm long, 1.53 mm wide. Epigastric furrow 0.67 mm from tracheal spiracle, spiracle 0.68 mm from base of spinnerets.

Legs unmodified. Tibial lengths (mm) and indices: I 1.44, 18; II 1.21, 21; III 0.99, 25; IV 1.60, 17. Ventral spination as in male except tibia III 1-1-2.

Epigynum as in Figure 36, internal genitalia as in Figure 43.

Natural history. Mature males have been taken from late August through late May, mature females in all months except January and October. Specimens have been taken from 6000 to 9300 feet (1850-2850 m), in yellow pine/oak forests and under rocks. I found this species in great abundance by sorting pine litter at Rustler's Park in the Chiricahua Mountains of southeastern Arizona in August 1972.

Distribution. Arizona, New Mexico and Colorado (Map 1).

Anyphaena hespar new species

Map 1; Figures 16, 32, 42, 49

Types. Male holotype, female paratype from Bear Canyon, Santa Catalina Mountains, Pima Co., Arizona, 8 December 1968 (Karl Stephan), deposited in AMNH. Male and female paratypes from Pima Co., Arizona, deposited in MCZ. The specific name is an arbitrary combination of letters.

Diagnosis. *Anyphaena hespar* is most closely related to *A. marginalis*. Males of the former may be distinguished by the spine-like dorsal prong of their RTA (Fig. 32), females by the conspicuous bulge in their epigynal midpiece (Fig. 42).

Male (Pima Co., Arizona). Coloration as in *Anyphaena celer*.

Total length 3.13 mm. Carapace 1.62 mm long, 1.31 mm wide, cephalic width 0.59 mm, clypeus height 0.08 mm. Eyes: diameters (mm): AME 0.05, ALE 0.08, PME 0.08, PLE 0.08; anterior eye row 0.33 mm long, straight; posterior eye row 0.45 mm long, procurved; MOQ length 0.19 mm, front width 0.14 mm, back width 0.24 mm; eye interdistances (mm): AME-AME 0.05, AME-ALE 0.03, PME-PME 0.08, PME-PLE 0.07, ALE-PLE 0.04.

Sternum 0.95 mm long, 0.79 mm wide. Chelicerae 0.39 mm long with 4 promarginal teeth and 8 retromarginal denticles.

Abdomen 1.80 mm long, 1.10 mm wide. Epigastric furrow 0.56 mm from tracheal spiracle, spiracle 0.56 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 1.31, 17; II 1.08, 21; III 0.81, 28; IV 1.39, 18. Ventral spination: tibiae I 4-2-2*, II 3-2-2*, III 1-2-2, IV 2-2-2; metatarsi I, II 2-2-0, III 2-0-2, IV 2-2-2. Femur III unmodified. Tibia III ventral spine 1 on retrolateral side missing, spine 2 thickened, cone-like. Coxae unmodified.

Palpus as in Figures 16, 32.

Female (Pima Co., Arizona). Coloration as in male of *A. celer*.

Total length 3.06 mm. Carapace 1.55 mm long, 1.26 mm wide, cephalic width 0.67 mm, clypeus height 0.06 mm. Eyes:

diameters (mm): AME 0.05, ALE 0.08, PME 0.08, PLE 0.08; anterior eye row 0.33 mm long, straight; posterior eye row 0.49 mm long, procurved; MOQ length 0.20 mm, front width 0.14 mm, back width 0.26 mm; eye interdistances (mm): AME-AME 0.05, AME-ALE 0.03, PME-PME 0.10, PME-PLE 0.07, ALE-PLE 0.04.

Sternum 1.04 mm long, 0.70 mm wide. Chelicerae 0.47 mm long with teeth as in male.

Abdomen 1.85 mm long, 1.08 mm wide. Epigastric furrow 0.49 mm from tracheal spiracle; spiracle 0.41 mm from base of spinnerets.

Legs unmodified. Tibial lengths (mm) and indices: I 1.13, 20; II 0.92, 25; III 0.72, 33; IV 1.26, 18. Ventral spination: tibiae I, II 4-2-2*, III 1-1-2, IV 1-2-2; metatarsi as in male.

Epigynum as in Figure 42, internal genitalia as in Figure 49.

Natural history. Mature males and females have been taken from late October through early April. Specimens have been taken from leaf litter and under rocks.

Distribution. Southeastern Arizona (Map 1).

Anyphaena rita new species

Map 1; Figures 7, 28, 37, 44

Types. Male holotype, female paratype from Bear Canyon, Santa Catalina Mountains, Pima Co., Arizona, 8 December 1968 (Karl Stephan), deposited in AMNH. Male and female paratypes from Pima Co., Arizona, deposited in MCZ. The specific name is a noun in apposition derived from the Santa Rita Mountains, where the species is abundant.

Diagnosis. *Anyphaena rita* is most closely related to *A. cochise*, both species having a conspicuously enlarged region of the embolus and a slightly recurved tip of the median apophysis. Males of *A. rita* (Fig. 28) may be distinguished by their smaller size and by the differences in the dorsal prong of the RTA. Females of *A. cochise* are unknown, but the epigynum of *A. rita*,

with its extremely broad midpiece, is quite distinctive (Fig. 37).

Male (Pima Co., Arizona). Coloration as in *Anyphaena celer*.

Total length 4.10 mm. Carapace 1.94 mm long, 1.60 mm wide, cephalic width 0.67 mm, clypeus height 0.07 mm. Eyes: diameters (mm): AME 0.05, ALE 0.08, PME 0.09, PLE 0.09; anterior eye row 0.36 mm long, recurved; posterior eye row 0.53 mm long, procurved; MOQ length 0.22 mm, front width 0.15 mm, back width 0.27 mm; eye interdistances (mm): AME-AME 0.05, AME-ALE 0.03, PME-PME 0.09, PME-PLE 0.09, ALE-PLE 0.05.

Sternum 1.13 mm long, 0.77 mm wide. Chelicerae 0.50 mm long with 4 promarginal teeth and 8 retromarginal denticles.

Abdomen 2.30 mm long, 1.26 mm wide. Epigastric furrow 0.67 mm from tracheal spiracle, spiracle 0.65 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 1.55, 14; II 1.39, 16; III 0.97, 23; IV 1.62, 14. Ventral spination: tibiae I 4-2-2*, II 3-2-2*, III, IV 2-2-2; metatarsi I, II 2-2-0, III 2-0-2, IV 2-2-2. Femur III unmodified. Tibia III ventral spines not thickened. Coxae III and IV with only a few short thick setae.

Palpus as in Figures 7, 28.

Female (Pima Co., Arizona). Coloration as in male of *A. celer*.

Total length 5.04 mm. Carapace 2.05 mm long, 1.53 mm wide, cephalic width 1.03 mm, clypeus height 0.09 mm. Eyes: diameters (mm): AME 0.05, ALE 0.10, PME 0.10, PLE 0.11; anterior eye row 0.41 mm long, recurved; posterior eye row 0.58 mm long, procurved; MOQ length 0.32 mm, front width 0.18 mm, back width 0.29 mm; eye interdistances (mm): AME-AME 0.07, AME-ALE 0.03, PME-PME 0.09, PME-PLE 0.10, ALE-PLE 0.08.

Sternum 1.13 mm long, 0.81 mm wide. Chelicerae 0.67 mm long with teeth as in male.

Abdomen 2.75 mm long, 1.94 mm wide. Epigastric furrow 1.06 mm from tracheal

spiracle, spiracle 0.95 mm from base of spinnerets.

Legs unmodified. Tibial lengths (mm) and indices: I 1.48, 15; II 1.26, 18; III 1.03, 21; IV 1.58, 17. Ventral spination as in male except tibiae III, IV 1-2-2, metatarsi IV 2-1-2.

Epigynum as in Figure 37, internal genitalia as in Figure 44.

Natural history. Mature males have been taken from mid-October through late March, mature females from early June through early February. Specimens have been taken from 4000 to 6800 feet. (1200-2075 m), in oak/grassland and under rocks.

Distribution. Arizona to Chihuahua, Mexico (Map 1).

Anyphaena cochise new species

Map 1; Figures 13, 35

Types. Male holotype from Rustlers Park, 8600 ft. (2625 m), Chiricahua Mountains, Cochise Co., Arizona, 9 September 1950 (W. J. Gertsch), deposited in AMNH. Male paratype from Cochise Co., Arizona, deposited in MCZ. The specific name is a noun in apposition and refers to the type locality.

Diagnosis. *Anyphaena cochise* is most closely related to *A. rita*, but the dorsal prong of the RTA is relatively longer in *A. cochise* (Fig. 35). Females of this species are unknown.

Male (Cochise Co., Arizona). Coloration as in *Anyphaena celer*.

Total length 5.44 mm. Carapace 2.52 mm long, 2.09 mm wide, cephalic width 0.88 mm, clypeus height 0.14 mm. Eyes: diameters (mm): AME 0.09, ALE 0.13, PME 0.13, PLE 0.13; anterior eye row 0.53 mm long, straight; posterior eye row 0.75 mm long, procurved; MOQ length 0.30 mm, front width 0.23 mm, back width 0.40 mm; eye interdistances (mm): AME-AME 0.05, AME-ALE 0.04, PME-PME 0.14, PME-PLE 0.11, ALE-PLE 0.06.

Sternum 1.44 mm long, 1.08 mm wide.

Chelicerae 0.75 mm long with 4 promarginal teeth and 7 retromarginal denticles.

Abdomen 3.38 mm long, 1.94 mm wide. Epigastric furrow 0.92 mm from tracheal spiracle, spiracle 1.03 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 2.32, 12; II 2.05, 13; III 1.39, 20; IV 2.14, 14. Ventral spination: tibiae I 4-2-2*, II 2-2-2*, III 1-2-2, IV 2-2-2; metatarsi I, II 2-2-0, III 2-0-2, IV 2-2-2. Femur III unmodified. Tibia III ventral spine 1 on retrolateral side thickened slightly. All coxae with a few scattered short thick setae.

Palpus as in Figures 13, 35.

Female. Unknown.

Natural history. Mature males have been taken in early September at 8600 feet (2625 m).

Distribution. Known only from the type locality (Map 1).

Anyphaena autumnna new species

Map 1; Figures 8, 29, 39, 45

Types. Male holotype, female paratype from Rustler Camp, Chiricahua Mountains, Cochise Co., Arizona, 9 September 1950 (W. J. Gertsch), deposited in AMNH. Male and female paratypes from Cochise and Graham Co., Arizona, deposited in MCZ. The specific name refers to the season of collection.

Diagnosis. *Anyphaena autumnna* is unlikely to be confused with any other species. The long recurved hook on the RTA and the peculiar form of the tip of the median apophysis are unlike any other species (Figs. 8, 29). The epigynum is closest to that of *A. gibboides*, but the mid-piece has a characteristic constriction near its midpoint (Fig. 39).

Male (Cochise Co., Arizona). Coloration as in *Anyphaena celer*, though the paramedian bands on the carapace are darker and wider than in that species.

Total length 5.51 mm. Carapace 2.50 mm long, 1.98 mm wide, cephalic width 1.03 mm, clypeus height 0.12 mm. Eyes:

diameters (mm): AME 0.09, ALE 0.12, PME 0.12, PLE 0.13; anterior eye row 0.55 mm long, recurved; posterior eye row 0.75 mm long, procurved; MOQ length 0.30 mm, front width 0.26 mm, back width 0.38 mm; eye interdistances (mm): AME-AME 0.08, AME-ALE 0.05, PME-PME 0.15, PME-PLE 0.11, ALE-PLE 0.06.

Sternum 1.46 mm long, 1.08 mm wide. Chelicerae 0.79 mm long with 4 promarginal teeth and 9 retromarginal denticles.

Abdomen 3.20 mm long, 2.16 mm wide. Epigastric furrow 1.04 mm from tracheal spiracle, spiracle 1.06 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 2.16, 13; II 1.93, 15; III 1.39, 22; IV 2.16, 14. Ventral spination: tibiae I 2-2-2, II, III, IV 1-2-2; metatarsi I, II 2-2-0, III 2-0-2, IV 2-2-2. Third legs unmodified.

Palpus as in Figures 8, 29.

Female (Cochise Co., Arizona). Coloration as in male.

Total length 6.41 mm. Carapace 2.34 mm long, 1.87 mm wide, cephalic width 1.12 mm, clypeus height 0.12 mm. Eyes: diameters (mm): AME 0.10, ALE 0.13, PME 0.13, PLE 0.13; anterior eye row 0.59 mm long, recurved; posterior eye row 0.70 mm long, procurved; MOQ length 0.33 mm, front width 0.27 mm, back width 0.42 mm; eye interdistances (mm): AME-AME 0.06, AME-ALE 0.03, PME-PME 0.17, PME-PLE 0.12, ALE-PLE 0.07.

Sternum 1.42 mm long, 1.08 mm wide. Chelicerae 0.99 mm long with 4 promarginal teeth and 8 retromarginal denticles.

Abdomen 3.96 mm long, 2.63 mm wide. Epigastric furrow 1.33 mm from tracheal spiracle, spiracle 1.33 mm from base of spinnerets.

Legs unmodified. Tibial lengths (mm) and indices: I 1.75, 16; II 1.60, 18; III 1.10, 25; IV 1.89, 15. Ventral spination: tibiae I 4-4-2, II 2-4-2, III 1-1-2, IV 1-2-2; metatarsi as in male.

Epigynum as in Figure 39, internal genitalia as in Figure 45.

Natural history. Mature males and fe-

males have been taken in August and September. Specimens have been taken at 8200 feet (2500 m). I collected a few immature males (which matured in the laboratory) of this species in pine litter in the Chirichua Mountains, Arizona, where mature *A. marginalis* were extremely abundant.

Distribution. Southeastern Arizona (Map 1).

Anyphaena gibboides new species

Map 1; Figures 14, 30, 40, 46

Types. Male holotype, female paratype from City Creek Canyon, Salt Lake Co., Utah, 22 May 1943 (Wilton Ivie), deposited in AMNH. Male and female paratypes from Lake Co., Oregon, deposited in MCZ. The specific name is an arbitrary combination of letters.

Diagnosis. *Anyphaena gibboides* is a distinctive species. Males have a sharply pointed median apophysis and serrate RTA which will separate them from the other known species (Figs. 14, 30). The epigynum is closest to that of *A. autumnna*, but lacks the constriction of the midpiece found in that species (Fig. 40).

Male (Salt Lake Co., Utah). Coloration as in *Anyphaena celer*.

Total length 3.31 mm. Carapace 1.60 mm long, 1.28 mm wide, cephalic width 0.54 mm, clypeus height 0.07 mm. Eyes: diameters (mm): AME 0.05, ALE 0.08, PME 0.08, PLE 0.08; anterior eye row 0.34 mm long, straight; posterior eye row 0.48 mm long, procurved; MOQ length 0.23 mm, front width 0.15 mm, back width 0.24 mm; eye interdistances (mm): AME-AME 0.05, AME-ALE 0.08, PME-PME 0.08, PME-PLE 0.07, ALE-PLE 0.05.

Sternum 0.85 mm long, 0.72 mm wide. Chelicerae 0.49 mm long with 4 promarginal teeth and 8 retromarginal denticles.

Abdomen 1.94 mm long, 1.24 mm wide. Epigastric furrow 0.58 mm from tracheal spiracle, spiracle 0.59 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 1.33, 17; II 1.24, 19; III 0.99, 23; IV 1.47, 16. Ventral spination: tibiae I 2-2-0, II 1-2-0, III 2-2-0, IV 2-2-2; metatarsi I, II 2-2-0, III 2-1-2, IV 2-2-2. Modifications of third leg as in *A. celer* save that all coxae have clumps of short thick setae.

Palpus as in Figures 14, 30.

Female (Salt Lake Co., Utah). Coloration as in male of *A. celer*.

Total length 3.74 mm. Carapace 1.75 mm long, 1.35 mm wide, cephalic width 0.83 mm, clypeus height 0.09 mm. Eyes: diameters (mm): AME 0.06, ALE 0.09, PME 0.08, PLE 0.08; anterior eye row 0.41 mm long, recurved; posterior eye row 0.57 mm long, procurved; MOQ length 0.24 mm, front width 0.18 mm, back width 0.28 mm; eye interdistances (mm): AME-AME 0.06, AME-ALE 0.03, PME-PME 0.12, PME-PLE 0.09, ALE-PLE 0.06.

Sternum 1.19 mm long, 0.83 mm wide. Chelicerae 0.62 mm long with 4 promarginal teeth and 6 retromarginal denticles.

Abdomen 2.36 mm long, 1.39 mm wide. Epigastric furrow 0.72 mm from tracheal spiracle, spiracle 0.70 mm from base of spinnerets.

Legs unmodified. Tibial lengths (mm) and indices: I 1.39, 18; II 1.24, 20; III 0.75, 27; IV 1.39, 18. Ventral spination: tibiae I 2-2-0, II, III 1-2-0, IV 1-2-2; metatarsi I, II 2-2-0, III 2-0-2, IV 2-2-2.

Epigynum as in Figure 40, internal genitalia as in Figure 46.

Natural history. Mature males and females have been taken in late May and June. Habitat data is lacking.

Distribution. Northern Utah west to southeastern Oregon (Map 1).

Anyphaena catalina new species

Map 1; Figures 15, 31, 41, 48

Types. Male holotype, female paratype from Mt. Lemon, Santa Catalina Mountains, Pima Co., Arizona, 13 July 1916 (F. E. Lutz), deposited in AMNH. Male and female paratypes from Pima Co., Arizona,

and México, Mexico, deposited in MCZ. The specific name is a noun in apposition and refers to the type locality.

Diagnosis. *Anyphaena catalina* is most closely related to *A. arbida*, though males of *A. catalina* may be readily distinguished by their recurved retrolateral tegular apophyses (Figs. 15, 31). Females of *A. arbida* are unknown; those of *A. catalina* may be recognized by the epigynal hood being roughly equal in size to the epigynal midpiece (Fig. 41).

Male (Pima Co., Arizona). Coloration as in *Anyphaena celer*.

Total length 3.53 mm. Carapace 1.78 mm long, 1.42 mm wide, cephalic width 0.72 mm, clypeus height 0.09 mm. Eyes: diameters (mm): AME 0.05, ALE 0.09, PME 0.08, PLE 0.09; anterior eye row 0.40 mm long, recurved; posterior eye row 0.51 mm long, procurved; MOQ length 0.21 mm, front width 0.17 mm, back width 0.26 mm; eye interdistances (mm): AME-AME 0.07, AME-ALE 0.04, PME-PME 0.09, PME-PLE 0.08, ALE-PLE 0.04.

Sternum 0.90 mm long, 0.70 mm wide. Chelicerae 0.56 mm long with 4 promarginal teeth and 6 retromarginal denticles.

Abdomen 1.85 mm long, 0.90 mm wide. Epigastric furrow 0.61 mm from tracheal spiracle, spiracle 0.65 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 2.07, 8; II 1.94, 9; III 1.08, 23; IV 1.80, 10. Ventral spination: tibiae I 4-2-2*, II 2-2-2*, III, IV 2-2-2; metatarsi I, II 2-2-0, III 2-0-2, IV 2-2-2. Modifications of third leg as in *A. celer* save that femur III lacks short thick setae and all coxae bear clumps of them.

Palpus as in Figures 15, 31.

Female (Pima Co., Arizona). Coloration as in male of *A. celer*.

Total length 4.57 mm. Carapace 1.84 mm long, 1.42 mm wide, cephalic width 0.94 mm, clypeus height 0.09 mm. Eyes: diameters (mm): AME 0.07, ALE 0.09, PME 0.09, PLE 0.09; anterior eye row 0.47 mm long, recurved; posterior eye row

0.63 mm long, procurved; MOQ length 0.26 mm, front width 0.22 mm, back width 0.33 mm; eye interdistances (mm): AME-AME 0.08, AME-ALE 0.04, PME-PME 0.15, PME-PLE 0.11, ALE-PLE 0.07.

Sternum 1.01 mm long, 0.85 mm wide. Chelicerae 0.68 mm long with 4 promarginal teeth and 8 retromarginal denticles.

Abdomen 2.74 mm long, 1.85 mm wide. Epigastric furrow 0.86 mm from tracheal spiracle, spiracle 0.94 mm from base of spinnerets.

Legs unmodified. Tibial lengths (mm) and indices: I 1.51, 14; II 1.33, 17; III 0.94, 23; IV 1.48, 16. Ventral spination: tibiae I, II 2-2-2°, III 1-2-2, IV 2-2-2; metatarsi as in male.

Epigynum as in Figure 41, internal genitalia as in Figure 48.

Natural history. Mature males and females have been taken in July and August. Specimens have been taken at 7500 feet (2300 m) in yellow pine/oak and douglas fir/white fir forests.

Distribution. Southeastern Arizona south to central Mexico (Map 1).

Anyphaena arbida new species

Map 1; Figures 17, 38

Types. Male holotype from Carr Canyon, Huachuca Mountains, Cochise Co., Arizona, 26 August 1950 (M. A. Cazier), deposited in AMNH. Male paratype from Cochise Co., Arizona, deposited in MCZ. The specific name is an arbitrary combination of letters.

Diagnosis. *Anyphaena arbida* is most closely related to *A. catalina*. Males of the former (Figs. 17, 38) lack the recurved retrolateral tegular apophysis of *A. catalina*; females of *A. arbida* are unknown.

Male (Cochise Co., Arizona). Coloration as in *Anyphaena celer*, except that posterior spinnerets are as in *A. dixiana*.

Total length 6.95 mm. Carapace 3.28 mm long, 2.41 mm wide, cephalic width 1.22 mm, clypeus height 0.14 mm. Eyes: diameter (mm): AME 0.11, ALE 0.13,

PME 0.13, PLE 0.15; anterior eye row 0.64 mm long, recurved; posterior eye row 0.89 mm long, procurved; MOQ length 0.43 mm, front width 0.31 mm, back width 0.44 mm; eye interdistances (mm): AME-AME 0.09, AME-ALE 0.04, PME-PME 0.18, PME-PLE 0.14, ALE-PLE 0.09.

Sternum 1.62 mm long, 1.33 mm wide. Chelicerae 1.30 mm long with 4 promarginal teeth and 8 retromarginal denticles.

Abdomen 3.71 mm long, 2.16 mm wide. Epigastric furrow 1.08 mm from tracheal spiracle, spiracle 1.12 mm from base of spinnerets. Spinnerets surrounded by a clump of unusually long setae.

Tibial lengths (mm) and indices: I 6.88, 5; II 3.35, 10; III 2.20, 16; IV 3.35, 10. Ventral spination: tibiae I 4-2-2°, II 3-2-2°, III, IV 2-2-0; metatarsi I, II 2-2-0, III, IV 2-2-2. Third legs unmodified.

Palpus as in Figures 17, 38.

Female. Unknown.

Natural history. Mature males have been collected in August. Habitat data is lacking.

Distribution. Cochise Co., Arizona (Map 1).

ANYPHAENA PECTOROSA GROUP

Diagnosis. The *pectorosa* group is closely related to the *pacifica* group, but males may be distinguished by the spurs on their coxae (Figs. 59-62). Females have the epigynum on a characteristic sclerotized plate (Figs. 74, 77, 79) and simple spermathecae (Figs. 75, 78, 80).

Description. Total length 4.5-6.5 mm. Carapace longer than wide, narrowed in front to less than half its maximum width in males, to slightly more than half its maximum width in females. Clypeus height more than 1.5 times the diameter of an anterior median eye. Posterior median, posterior lateral and anterior lateral eyes subequal in size, almost twice the diameter of anterior medians. Procurved posterior eye row longer than slightly recurved anterior row. Median ocular quadrangle almost

twice as wide in back as in front. Anterior median eyes separated by slightly less than their diameter, slightly closer to anterior laterals than to each other. Posterior medians separated by slightly more than their diameter, slightly closer to posterior laterals. Anterior laterals separated by their radius from posterior laterals. Sternum longer than wide, with a low hirsute knob behind its middle in some males. Chelicerae with 4 promarginal teeth and 7-9 retromarginal denticles. Abdomen longer than wide, tracheal spiracle midway between epigastric furrow and base of spinnerets. Leg formula 1423. Metatarsi I and II with two pairs of ventral spines. Males with coxae II bearing round knobs, coxae III and IV bearing spurs. Palpus with an elongated median apophysis, enlarged conductor and inconspicuous embolus. Retrolateral tibial apophysis short. Epigynum on a sclerotized plate, without a hood. Two simple spermathecae.

Variation. The species in this group show little intraspecific variation, individual or geographical, in size, structure or coloration.

KEY TO SPECIES

- 1a. Coxae III of males with posterior spur bifid (Figs. 59, 61, 62); sternum of males with a low hirsute knob behind middle; sclerotized epigynal plate wider posteriorly than anteriorly (Figs. 74, 79) 2
 1b. Coxae III of males with posterior spur not bifid (Fig. 60); sternum of males without a low hirsute knob behind middle; sclerotized epigynal plate wider anteriorly than posteriorly (Fig. 77) *fraterna*
 2a. Distal tip of palpal median apophysis bent sharply towards cymbium (Figs. 55, 58); sclerotized epigynal plate with pronounced posterolateral corners (Fig. 74) 3
 2b. Distal tip of palpal median apophysis not bent sharply towards cymbium (Fig. 57); sclerotized epigynal plate without pro-

- nounced posterolateral corners (Fig. 79) *alachua*
 3a. Distal tip of palpal median apophysis meeting the recessed, dorsal branch of the apophysis (Fig. 55); sclerotized epigynal plate with pronounced posterolateral corners (Fig. 74) *pectorosa*
 3b. Distal tip of palpal median apophysis not meeting the recessed, dorsal branch of the apophysis (Fig. 58); females unknown *lacka*

Anyphaena pectorosa L. Koch Map 2; Figures 51, 55, 59, 74, 75

Anyphaena pectorosa L. Koch, 1866, Arachn. Fam. Drass., 198, pl. 8, figs. 131, 132 (♂). Male holotype from Baltimore, Maryland, in BMNH, examined. Bryant, 1931, Psyche, 38: 110, pl. 6, fig. 5, ♂. Chickering, 1939, Pap. Michigan Acad. Sci., 24: 51, figs. 5-8, ♂, ♀. Comstock, 1940, Spider Book, rev. ed., p. 577, fig. 636, ♀. Kaston, 1948, Bull. Connecticut Geol. Natur. Hist. Surv., 70: 408, figs. 1453, 1477-1480, ♂, ♀. Roever, 1954, Katalog der Araneae, 2: 529. Bonnet, 1955, Bibliographia Araneorum, 2: 346.

Anyphaena calcarata Emerton, 1890, Trans. Connecticut Acad. Sci., 8: 187, pl. 6, figs. 3-3d (♂, ♀). Male holotype, female allotype from West Haven, Connecticut, in MCZ, examined. Emerton, 1902, Common Spiders, p. 12, figs. 42, 43, ♂, ♀.

Gayenna calcarata, Banks, 1910, Bull. U.S. Nat. Mus., 72: 13.

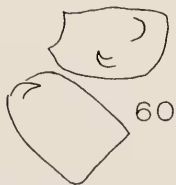
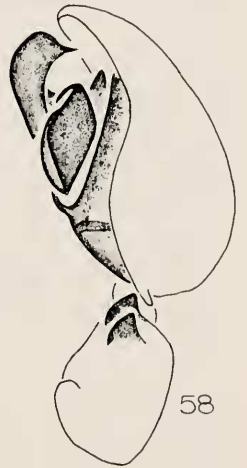
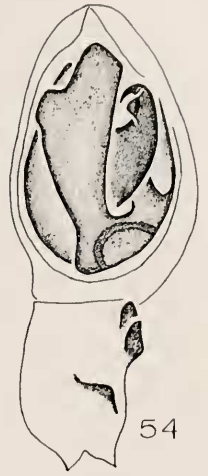
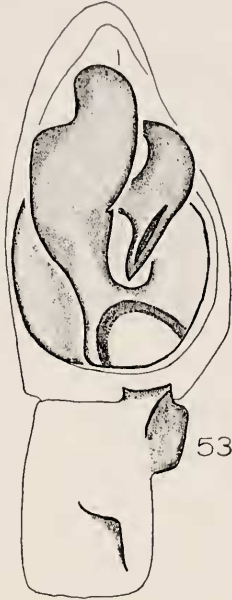
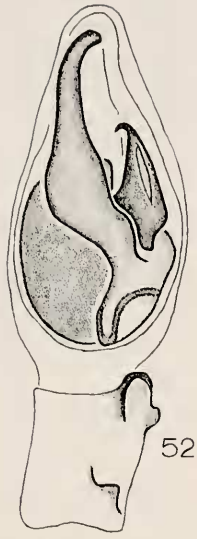
Gayenna pectorosa, Comstock, 1912, Spider Book, p. 563 (in part), fig. 636, ♀ (not fig. 637).

Diagnosis. *Anyphaena pectorosa* is closest to *A.alachua*, but may readily be distinguished from it by the highly curved median apophysis of males (Fig. 55) and the pronounced posterolateral corners of the sclerotized epigynal plate of females (Fig. 74).

Male (Fairfax Co., Virginia). Total length 5.40 mm. Carapace 2.43 mm long, 1.98 mm wide, cephalic width 0.88 mm, clypeus height 0.11 mm, yellow with thin dark border and two dark paramedian longitudinal bands. Eyes: diameters (mm):

Plate 5

Figures 51-54. Left palpi, ventral view. Figures 55-58. Left palpi, retrolateral view. Figures 59-62. Male coxae, ventral view. 51, 55, 59. *Anyphaena pectorosa* L. Koch. 52, 56, 60. *Anyphaena fraterna* (Banks). 53, 57, 61. *Anyphaenaalachua* new species. 54, 58, 62. *Anyphaena lacka* new species.



AME 0.06, ALE 0.11, PME 0.11, PLE 0.12; anterior eye row 0.48 mm long, slightly recurved; posterior eye row 0.65 mm long, procurved; MOQ length 0.28 mm, front width 0.20 mm, back width 0.35 mm; eye interdistances (mm): AME-AME 0.07, AME-ALE 0.04, PME-PME 0.14, PME-PLE 0.13, ALE-PLE 0.05.

Sternum 1.35 mm long, 1.01 mm wide, pale yellow with translucent border, darkened extensions to coxae and a low hirsute knob behind middle. Chelicerae 0.73 mm long with 4 promarginal teeth and 7 retro-marginal denticles, pale yellow with boss outlined in gray. Labium and endites yellow, darkest proximally. Endites slightly invaginated at middle.

Abdomen 3.15 mm long, 1.67 mm wide, pale white with transverse rows of dark markings, venter pale. Epigastric furrow 1.01 mm from tracheal spiracle, spiracle 1.06 mm from base of spinnerets.

Legs pale yellow with distal segments darkest. Tibial lengths (mm) and indices: I 3.10, 7; II 2.52, 9; III 1.82, 16; IV 2.56, 10. Ventral spination: tibiae I 2-2-1, II-IV 2-2-2; metatarsi I, II 2-2-0, III 2-0-2, IV 2-2-2. Coxae II, III and IV modified as in Figure 59.

Palpus as in Figures 51, 55.

Female (Fairfax Co., Virginia). Coloration as in male.

Total length 5.44 mm. Carapace 2.41 mm long, 1.91 mm wide, cephalic width 0.97 mm, clypeus height 0.08 mm. Eyes: diameters (mm): AME 0.07, ALE 0.12, PME 0.11, PLE 0.12; anterior eye row 0.52 mm long, recurved; posterior eye row 0.71 mm long, procurved; MOQ length 0.33 mm, front width 0.20 mm, back width 0.37 mm; eye interdistances (mm): AME-AME 0.05, AME-ALE 0.04, PME-PME 0.15, PME-PLE 0.10, ALE-PLE 0.07.

Sternum 1.31 mm long, 1.06 mm wide, without hirsute knob. Chelicerae 0.72 mm long with 4 promarginal teeth and 8 retro-marginal denticles.

Abdomen 3.10 mm long, 1.76 mm wide. Epigastric furrow 0.70 mm from tracheal

spiracle, spiracle 1.22 mm from base of spinnerets.

Legs unmodified. Tibial lengths (mm) and indices: I 2.41, 11; II 2.05, 13; III 1.44, 19; IV 2.20, 12. Ventral spination: tibiae I, II 2-2-0, III, IV 1-2-1; metatarsi I, II 2-2-0, III, IV 2-2-2.

Epigynum as in Figure 74, internal genitalia as in Figure 75.

Natural history. Mature males have been taken from mid-April through early September, mature females from mid-April through mid-August. Specimens have been taken by sweeping foliage, in Malaise and pitfall traps, and under rocks. Egg cases taken with females contained 65-95 eggs.

Distribution. New England west to Michigan, south to western Florida and eastern Texas (Map 2).

Anyphaena alachua new species

Map 2; Figures 53, 57, 61, 79, 80

Types. Male holotype, female paratype from west of Gainesville, Alachua Co., Florida, 18 April 1938 (Willis J. Gertsch), deposited in AMNH. Male and female paratypes from Alachua Co., Florida, deposited in MCZ. The specific name is a noun in apposition and refers to the type locality.

Diagnosis. *Anyphaena alachua* is closest to *A. pectorosa* but the median apophysis is not highly curved (Fig. 57) and the epigynal plate lacks pronounced posterolateral corners (Fig. 79).

Male (Alachua Co., Florida). Coloration as in *Anyphaena pectorosa*.

Total length 4.90 mm. Carapace 2.41 mm long, 2.01 mm wide, cephalic width 0.79 mm, clypeus height 0.13 mm. Eyes: diameters (mm): AME 0.07, ALE 0.12, PME 0.12, PLE 0.13; anterior eye row 0.51 mm long, slightly recurved; posterior eye row 0.70 mm long, procurved; MOQ length 0.30 mm, front width 0.22 mm, back width 0.36 mm; eye interdistances (mm): AME-AME 0.07, AME-ALE 0.04, PME-PME 0.12, PME-PLE 0.11, ALE-PLE 0.06.

Sternum 1.26 mm long, 1.01 mm wide, with low hirsute knob behind middle. Chelicerae 0.76 mm long with 4 promarginal teeth and 9 retromarginal denticles.

Abdomen 2.48 mm long, 1.48 mm wide. Epigastric furrow 0.76 mm from tracheal spiracle, spiracle 0.83 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 2.77, 10; II 2.27, 11; III 1.44, 22; IV 1.94, 14. Ventral spination: tibiae I, II 2-2-0, III 1-2-2, IV 2-2-2; metatarsi I, II 2-2-0, III 2-0-2, IV 2-2-2. Coxae II, III and IV modified as in Figure 61.

Palpus as in Figures 53, 57.

Female (Alachua Co., Florida). Coloration as in male of *A. pectorosa*.

Total length 6.17 mm. Carapace 2.45 mm long, 1.80 mm wide, cephalic width 0.94 mm, clypeus height 0.12 mm. Eyes: diameters (mm): AME 0.08, ALE 0.13, PME 0.12, PLE 0.13; anterior eye row 0.57 mm long, slightly recurved; posterior eye row 0.73 mm long, procurved; MOQ length 0.30 mm, front width 0.22 mm, back width 0.40 mm; eye interdistances (mm): AME-AME 0.07, AME-ALE 0.04, PME-PME 0.15, PME-PLE 0.11, ALE-PLE 0.07.

Sternum 1.35 mm long, 1.08 mm wide, without hirsute knob. Chelicerae 0.84 mm long with teeth as in male.

Abdomen 3.53 mm long, 2.02 mm wide. Epigastric furrow 1.10 mm from tracheal spiracle, spiracle 1.21 mm from base of spinnerets.

Legs unmodified. Tibial lengths (mm) and indices: I 2.30, 13; II 1.91, 14; III 1.31, 22; IV 2.09, 13. Ventral spination as in male save metatarsi III 2-2-2.

Epigynum as in Figure 79, internal genitalia as in Figure 80.

Natural history. Mature males have been taken in late April and early May, mature females from late March through mid-May, by sweeping.

Distribution. Known only from Florida (Map 2).

Anyphaena lacka new species
Map 2; Figures 54, 58, 62

Type. Male holotype from Lake Corpus Christi State Park, southwest of Mathis, San Patricio Co., Texas, 28 June 1962 (J. A. Beatty), deposited in MCZ. The specific name is an arbitrary combination of letters.

Diagnosis. *Anyphaena lacka* is most closely related to *A. alachua* but has a distinct point on the tip of the median apophysis (Fig. 58). Females of *A. lacka* are unknown.

Male (San Patricio Co., Texas). Coloration as in *Anyphaena pectorosa*.

Total length 4.61 mm. Carapace 2.05 mm long, 1.69 mm wide, cephalic width 0.79 mm, clypeus height 0.12 mm. Eyes: diameters (mm): AME 0.07, ALE 0.12, PME 0.11, PLE 0.11; anterior eye row 0.47 mm long, slightly recurved; posterior eye row 0.61 mm long, procurved; MOQ length 0.26 mm, front width 0.19 mm, back width 0.32 mm; eye interdistances (mm): AME-AME 0.05, AME-ALE 0.03, PME-PME 0.11, PME-PLE 0.08, ALE-PLE 0.04.

Sternum 1.24 mm long, 0.90 mm wide, with low hirsute knob behind middle. Chelicerae 0.64 mm long with 4 promarginal teeth and 9 retromarginal denticles.

Abdomen 2.41 mm long, 1.33 mm wide. Epigastric furrow 0.74 mm from tracheal spiracle, spiracle 0.90 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 2.38, 9; II 1.91, 12; III 1.32, 30; IV 1.93, 12. Ventral spination: tibiae I, II 2-2-0, III, IV 1-2-2; metatarsi I, II 2-2-0, III 2-0-2, IV 2-2-2. Coxae II, III, and IV modified as in Figure 62.

Palpus as in Figures 54, 58.

Female. Unknown.

Natural history and distribution. Known only from the type specimen.

Anyphaena fraterna (Banks)
Map 2; Figures 52, 56, 60, 77, 78

Anyphaena conspersa Keyserling, 1887, Verh. zool. bot. Ges. Wien, 37: 453, pl. 6, fig. 23

(♀). Female holotype from Bee Spring, Kentucky, in MCZ, examined; preoccupied by *Anyphaena conspersa* Simon, 1878.

Gayenna fraterna Banks, 1896, Trans. Amer. Ent. Soc., 23: 63. Male holotype from Sea Cliff, New York, in MCZ, examined.

Anyphaena fraterna, Simon, 1897, Hist. Natur. Araign., 2: 96. Bryant, 1931, Psyche, 38: 110, pl. 6, fig. 6, pl. 8, fig. 23, ♂, ♀. Comstock, 1940, Spider Book, rev. ed., p. 577, fig. 637, ♂. Kaston, 1948, Bull. Connecticut Geol. Natur. Hist. Surv., 70: 408, figs. 1454–1456, ♂, ♀. Roewer, 1954, Katalog der Araneae, 2: 529. Bonnet, 1955, Bibliographia Araneorum, 2: 344. *Sillus conspersus*, Petrunkevitch, 1911, Bull. Amer. Mus. Natur. Hist., 29: 511.

Gayenna pectorosa, Comstock, 1912, Spider Book, p. 563 (in part), fig. 637, ♂.

Diagnosis. *Anyphaena fraterna* is a distinctive species easily recognized by the long and narrow median apophysis of males (Fig. 52) and by the female's epigynal plate being wider anteriorly than posteriorly (Fig. 77).

Male (Hall Co., Georgia). Coloration as in *Anyphaena pectorosa*.

Total length 4.93 mm. Carapace 2.23 mm long, 1.85 mm wide, cephalic width 0.81 mm, clypeus height 0.10 mm. Eyes: diameters (mm): AME 0.06, ALE 0.12, PME 0.11, PLE 0.11; anterior eye row 0.45 mm long, slightly recurved; posterior eye row 0.64 mm long, procurved; MOQ length 0.30 mm, front width 0.18 mm, back width 0.33 mm; eye interdistances (mm): AME–AME 0.05, AME–ALE 0.04, PME–PME 0.12, PME–PLE 0.08, ALE–PLE 0.05.

Sternum 1.28 mm long, 0.99 mm wide, without hirsute knob. Chelicerae 0.59 mm long with 4 promarginal teeth and 9 retro-marginal denticles.

Abdomen 2.83 mm long, 1.60 mm wide. Epigastric furrow 0.97 mm from tracheal spiracle, spiracle 0.85 mm from base of spinnerets.

Legs with scattered dark spots. Tibial lengths (mm) and indices: I 2.60, 8; II 2.16, 11; III 1.52, 16; IV 2.47, 10. Ventral spination: tibiae I, II 2–2–0, III 1–2–2, IV 2–2–2; metatarsi I, II 2–2–0, III, IV 2–2–2. Coxae II, III and IV modified as in Figure 60.

Palpus as in Figures 52, 56.

Female (Hall Co., Georgia). Coloration as in male of *A. pectorosa*.

Total length 5.00 mm. Carapace 2.32 mm long, 1.80 mm wide, cephalic width 0.94 mm, clypeus height 0.10 mm. Eyes: diameters (mm): AME 0.06, ALE 0.11, PME 0.11, PLE 0.11; anterior eye row 0.49 mm long, recurved; posterior eye row 0.69 mm long, procurved; MOQ length 0.27 mm, front width 0.18 mm, back width 0.36 mm; eye interdistances (mm): AME–AME 0.05, AME–ALE 0.04, PME–PME 0.15, PME–PLE 0.09, ALE–PLE 0.05.

Sternum 1.28 mm long, 1.04 mm wide. Chelicerae 0.75 mm long with teeth as in male.

Abdomen 2.97 mm long, 1.71 mm wide. Epigastric furrow 0.85 mm from tracheal spiracle, spiracle 0.85 mm from base of spinnerets.

Legs unmodified. Tibial lengths (mm) and indices: I 2.29, 11; II 1.89, 13; III 1.30, 19; IV 2.16, 13. Ventral spination as in male.

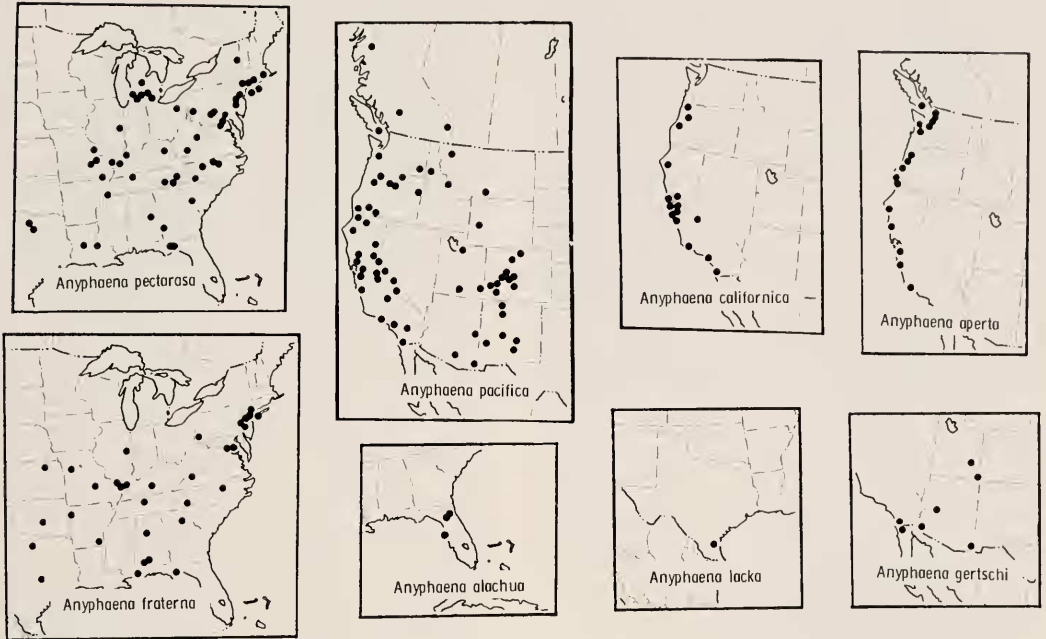
Epigynum as in Figure 77, internal genitalia as in Figure 78.

Natural history. Mature males have been taken from late March through early July, mature females from late March through late August. Specimens have been taken by sweeping foliage, in Malaise and pitfall traps, and under logs. I collected this species in great abundance by sweeping honeysuckle (*Lonicera* sp.) at night in southern West Virginia during June 1971.

Distribution. Southern New York west to eastern Kansas, south to western Florida and eastern Texas (Map 2).

ANYPHAENA PACIFICA GROUP

Diagnosis. The *pacifica* group is closely related to the *pectorosa* group and appears to displace it in the western United States. The males have similarly short retrolateral tibial apophyses (Figs. 69–71), but *pacifica* group males lack the coxal spurs characteristic of the *pectorosa* group, though



Map 2. Distributions of *Anyphaena alachua*, *A. aperta*, *A. californica*, *A. fraterna*, *A. gertschi*, *A. lacka*, *A. pacifica* and *A. pectorosa*.

males of *Anyphaena gertschi* have rounded knobs on the coxae. Females lack the sclerotized epigynal plates found in the *pectorosa* group, but have a lightly sclerotized atrium-like area posteromedially (Figs. 66, 67, 72) and long, sometimes coiling, ducts (Figs. 68, 73, 76).

Description. Total length 4–6 mm. Carapace longer than wide, narrowed in front by at least one-third of its maximum width, often by more than half. Clypeus height roughly equal to anterior median eye diameter. All eyes subequal in size. Procurved posterior eye row longer than slightly recurved anterior eye row. Median ocular quadrangle longer than wide in front, wider in back than long. Anterior median eyes separated by less than their diameter, much closer to anterior laterals than to each other. Posterior medians separated by more than their diameter, much closer to posterior laterals. Anterior laterals separated by slightly more than their radius from posterior laterals. Sternum longer

than wide, without a hirsute knob. Chelicerae with 3 promarginal teeth and 6–9 retromarginal denticles. Abdomen longer than wide, tracheal spiracle midway between epigastric furrow and base of spinnerets. Leg formula 1423. Metatarsi I and II with two pairs of ventral spines. Males with legs unmodified. (*A. pacifica* and *A. californica*) or with coxae bearing round knobs and femora II and III bearing patches of short stiff setae ventrally (*A. gertschi*). Palpus with an elongated median apophysis, enlarged conductor and inconspicuous embolus. Retrolateral tibial apophysis short. Epigynum not on a sclerotized plate, without a hood, with a more or less pronounced atrium-like lightly sclerotized area posteromedially. Internal genitalia with long ducts that coil in some species.

Variation. Two species in this group, *A. pacifica* and *A. californica*, show a great deal of variation in genitalic structure. In both species the shape of the tip of the pal-

pal median apophysis and the coiling of the epigynal ducts are strikingly variable, and it was initially thought that many species were involved. Three sources of evidence, however, have indicated otherwise. First, many females are found in which the ducts on one side of the epigynum coil differently from those on the other side. Secondly, when many specimens are taken together at one locality on a single day, several variants are often found. Finally, the retrolateral tibial apophysis, which usually provides excellent diagnostic characters in anyphaenids, is stable within the species as they are defined here. Until such time as biological evidence on the breeding habits of these spiders can be obtained, it seems best to consider both *A. pacifica* and *A. californica* as widespread, variable species.

KEY TO SPECIES

- 1a. Retrolateral tibial apophysis (RTA) without a dorsal process (Fig. 69). Median apophysis with a deep invagination below tip giving the tip a chelate appearance (Fig. 65). Epigynum with large wing-shaped paramedian flaps (Fig. 72) *gertschi*
- 1b. Retrolateral tibial apophysis (RTA) with a dorsal process (Figs. 70, 71). Median apophysis without a deep invagination below tip (Figs. 63, 64). Epigynum without large wing-shaped paramedian flaps (Figs. 66, 67) 2
- 2a. Dorsal process of RTA short, located distally (Fig. 70). Median apophysis narrowing gradually towards tip (Fig. 63). Internal ducts with many coils (Fig. 68) *pacifica*
- 2b. Dorsal process of RTA long, located proximally (Fig. 71). Median apophysis narrowing abruptly towards tip (Fig. 64). Internal ducts without many coils (Fig. 73) *californica*

Anyphaena pacifica (Banks)
Map 2; Figures 63, 66, 68, 70

Gayenna pacifica Banks, 1896, Trans. Amer. Ent. Soc., 23: 63. Female holotype from Olympia, Washington, in MCZ, examined.

Anyphaena pacifica, Simon, 1897, Hist. Natur. Araign., 2: 96. Bryant, 1931, Psyche, 38: 115, pl. 8, fig. 36, ♀. Levi and Levi, 1951, Zoologica (New York), 36: 228, fig. 25, ♂. Roewer, 1954, Katalog der Araneae, 2: 529. Bonnet, 1955, Bibliographia Araneorum, 2: 346.

Anyphaena mundella Chamberlin, 1920, Pomona Coll. J. Ent. Zool., 12: 12, pl. 5, fig. 3 (♀, not ♂, = *Aysha incursa*). Female holotype from Claremont, California, in MCZ, examined. Bryant, 1931, Psyche, 38: 120 (sub *Aysha decepta* [sic]). Roewer, 1954, Katalog der Araneae 2: 534 (sub *Aysha decepta* [sic]). Bonnet, 1955, Bibliographia Araneorum, 2: 836 (sub *Aysha decepta* [sic]). NEW SYNONYMY.

Anyphaena intermontana Chamberlin, 1920, Canad. Ent., 52: 200, fig. 22-6 (♀). Female holotype from Mill Creek, Salt Lake Co., Utah, in MCZ, examined. Bryant, 1931, Psyche, 38: 114 (sub *Anyphaena californica* [sic]). Roewer, 1954, Katalog der Araneae, 2: 528 (sub *Anyphaena californica* [sic]). Bonnet, 1955, Bibliographia Araneorum, 2: 343 (sub *Anyphaena californica* [sic]). NEW SYNONYMY.

Gayenna saniana Chamberlin and Gertsch, 1928, Proc. Biol. Soc. Wash., 41: 185. Male holotype from Verdure, San Juan Co., Utah, in AMNH, examined. Roewer, 1954, Katalog der Araneae, 2: 540. NEW SYNONYMY.

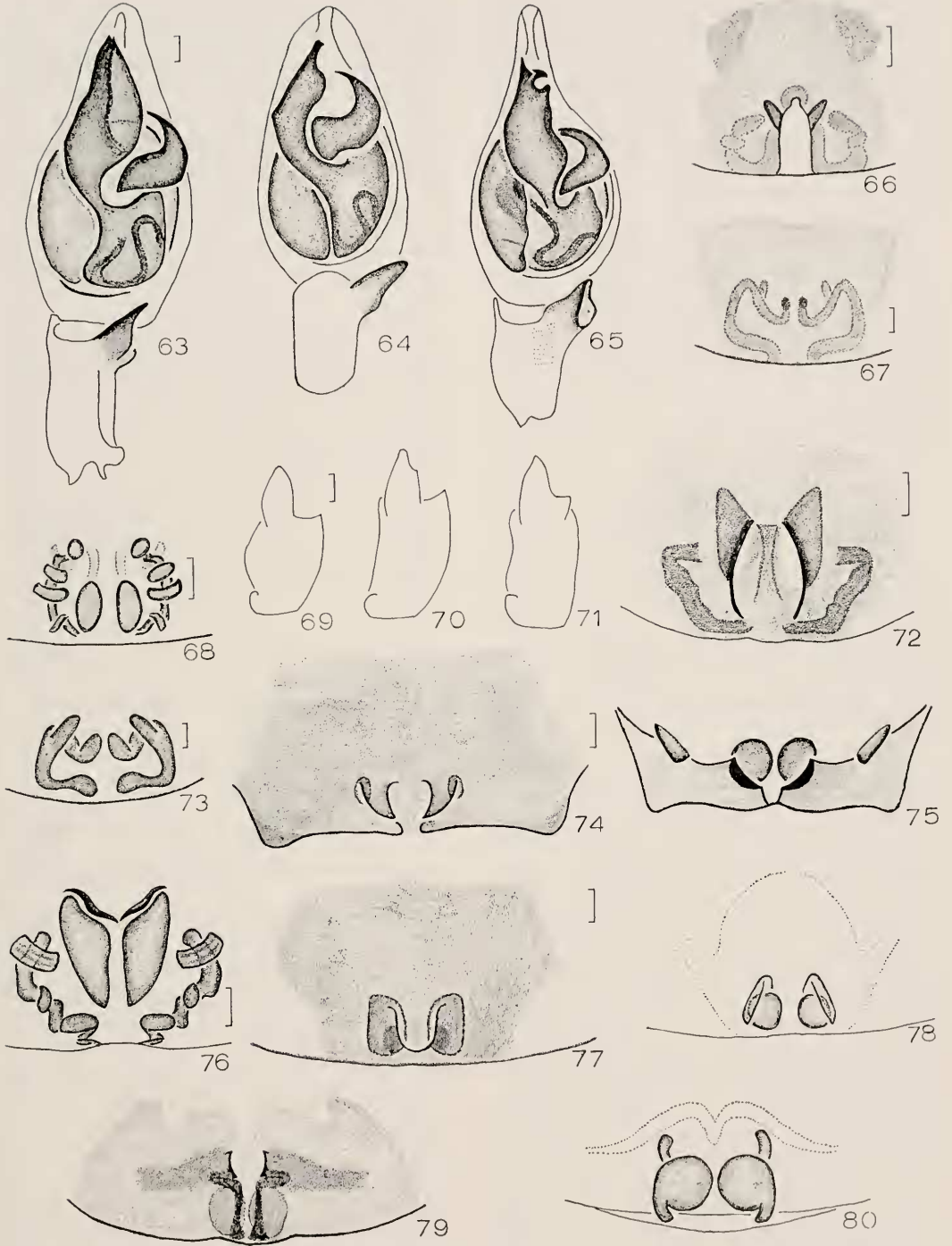
Anyphaena santiuana, Bryant, 1931, Psyche, 38: 107. Bonnet, 1955, Bibliographia Araneorum, 2: 347.

Anyphaena pomona Chamberlin and Ivie, 1941, Bull. Univ. Utah, Biol., 6: 23, pl. 2, fig. 16 (♀). Female holotype from Mill Creek, Tehama Co., California, in AMNH, examined. Roewer, 1954, Katalog der Araneae, 2: 529. NEW SYNONYMY.

Gayenna jolleusis Schenkel, 1950, Verh. Naturf. Ges. Basel, 61: 77, fig. 27 (♀). Female holotype from La Jolla, California, in Naturhistorisches Museum, Basel, examined. Roewer, 1954, Katalog der Araneae, 2: 540. NEW SYNONYMY.

Plate 6

Figures 63-65. Left palpi, ventral view. Figures 69-71. Left palpal tibiae, retrolateral view. Figures 66, 67, 72, 74, 77, 79. Epigyna, ventral view. Figures 68, 73, 75, 76, 78, 80. Internal genitalia, dorsal view. 63, 66, 68, 70. *Anyphaena pacifica* (Banks). 64, 67, 71, 73. *Anyphaena californica* (Banks). 65, 69, 72, 76. *Anyphaena gertschi* new species. 74, 75. *Anyphaena pectorosa* L. Koch. 77, 78. *Anyphaena traterna* (Banks). 79, 80. *Anyphaena alachua* new species.



Diagnosis. *Anyphaena pacifica* is closest to *A. californica*, but males may be distinguished by the short, distal, dorsal process of the retrolateral tibial apophysis (Fig. 70) and the gradually narrowing tip of the median apophysis (Fig. 63), while females have distinctive highly coiled internal ducts (Fig. 68). Variation in this species is discussed above.

Male (El Dorado Co., California). Total length 5.18 mm. Carapace 2.34 mm long, 1.94 mm wide, cephalic width 0.86 mm, clypeus height 0.12 mm, pale orange with thin dark border and two dark paramedian longitudinal bands. Eyes: diameters (mm): AME 0.09, ALE 0.12, PME 0.10, PLE 0.11; anterior eye row 0.51 mm long, slightly procurved; posterior eye row 0.69 mm long, procurved; MOQ length 0.28 mm, front width 0.24 mm, back width 0.34 mm; eye interdistances (mm): AME-AME 0.07, AME-ALE 0.03, PME-PME 0.14, PME-PLE 0.10, ALE-PLE 0.05.

Sternum 1.49 mm long, 1.04 mm wide, pale orange with darker border. Chelicerae 0.67 mm long with 3 promarginal teeth and 8 retromarginal denticles, dark orange-brown proximally, pale orange distally, with boss outlined in gray. Labium and endites orange, darkest proximally. Endites slightly invaginated at middle.

Abdomen 2.81 mm long, 1.69 mm wide, reddish-brown throughout. Epigastric furrow 0.85 mm from tracheal spiracle, spiracle 0.92 mm from base of spinnerets.

Legs pale orange, unmodified. Tibial lengths (mm) and indices: I 2.11, 12; II 1.87, 13; III 1.44, 20; IV 2.07, 15. Ventral spination: tibiae I, II 2-2-0, III 1-2-2, IV 2-2-2; metatarsi I, II 2-2-0, III, IV 2-2-2.

Palpus as in Figures 63, 70.

Female (Mono Co., California). Coloration as in male.

Total length 5.39 mm. Carapace 2.34 mm long, 1.62 mm wide, cephalic width 0.94 mm, clypeus height 0.09 mm. Eyes: diameters (mm): AME 0.10, ALE 0.12, PME 0.11, PLE 0.11; anterior eye row 0.51 mm long, slightly recurved; posterior eye

row 0.73 mm long, procurved; MOQ length 0.29 mm, front width 0.25 mm, back width 0.36 mm; eye interdistances (mm): AME-AME 0.06, AME-ALE 0.03, PME-PME 0.15, PME-PLE 0.10, ALE-PLE 0.07.

Sternum 1.44 mm long, 1.01 mm wide. Chelicerae 0.71 mm long with teeth as in male.

Abdomen 3.02 mm long, 1.69 mm wide. Epigastric furrow 0.81 mm from tracheal spiracle, spiracle 0.86 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 1.84, 15; II 1.71, 15; III 1.39, 19; IV 2.07, 13. Ventral spination as in male save tibiae III 1-1-2 and IV 1-2-2.

Epigynum as in Figure 66, internal genitalia as in Figure 68.

Natural history. Mature males have been taken from late February through late July, mature females year round. Specimens have been taken in montane forests, in pitfall traps, under rocks and commonly in houses.

Distribution. Western North America from British Columbia south to California, Arizona and New Mexico (Map 2).

Anyphaena californica (Banks)

Map 2; Figures 64, 67, 71, 73

Gayenna californica Banks, 1904, Proc. California Acad. Sci., 3: 338, pl. 38, fig. 2 (♀). Female holotype from Palo Alto, California, in MCZ, examined.

Anyphaena ruens Chamberlin, 1920, Pomona Coll. J. Ent. Zool., 12: 11, pl. 5, fig. 1 (♂). Male holotype from Claremont, California, in MCZ, examined. Bryant, 1931, Psyche, 38: 113. Roever, 1954, Katalog der Araneae, 2: 529. Bonnet, 1955, Bibliographia Araneorum, 2: 347. NEW SYNONYMY.

Anyphaena californica, Bryant, 1931, Psyche, 38: 114. Roever, 1954, Katalog der Araneae, 2: 528. Bonnet, 1955, Bibliographia Araneorum, 2: 343.

Diagnosis. *Anyphaena californica* is most closely related to *A. pacifica*, but males have a long, proximal, dorsal process on the retrolateral tibial apophysis (Fig. 71) and an abruptly narrowed tip of the me-

dian apophysis (Fig. 64), while the internal ducts of the female are not highly coiled (Fig. 73). Variation in this species is discussed above.

Male (San Diego Co., California). Coloration as in *Anyphaena pacifica* except that the abdomen is pale white with transverse rows of dark markings.

Total length 4.68 mm. Carapace 2.21 mm long, 1.78 mm wide, cephalic width 0.68 mm, clypeus height 0.07 mm. Eyes: diameters (mm): AME 0.07, ALE 0.09, PME 0.10, PLE 0.11; anterior eye row 0.43 mm long, recurved; posterior eye row 0.59 mm long, procurved; MOQ length 0.30 mm, front width 0.20 mm, back width 0.32 mm; eye interdistances (mm): AME-AME 0.06, AME-ALE 0.04, PME-PME 0.13, PME-PLE 0.11, ALE-PLE 0.07.

Sternum 1.31 mm long, 0.90 mm wide. Chelicerae 0.60 mm long with 3 promarginal teeth and 8 retromarginal denticles.

Abdomen 2.97 mm long, 1.34 mm wide. Epigastric furrow 0.79 mm from tracheal spiracle, spiracle 0.85 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 3.28, 5; II 3.20, 7; III 2.27, 8; IV 2.93, 7. Ventral spination: tibiae I 2-2-0, II 2-2-2, III 1-1-2, IV 1-2-2; metatarsi I, II 2-2-0, III, IV 2-2-2.

Palpus as in Figures 64, 71.

Female (Humboldt Co., California). Coloration as in male.

Total length 5.98 mm. Carapace 2.56 mm long, 1.91 mm wide, cephalic width 1.03 mm, clypeus height 0.08 mm. Eyes: diameters (mm): AME 0.09, ALE 0.11, PME 0.12, PLE 0.12; anterior eye row 0.52 mm long, recurved; posterior eye row 0.69 mm long, procurved; MOQ length 0.35 mm, front width 0.25 mm, back width 0.37 mm; eye interdistances (mm): AME-AME 0.07, AME-ALE 0.04, PME-PME 0.13, PME-PLE 0.10, ALE-PLE 0.06.

Sternum 1.44 mm long, 1.08 mm wide. Chelicerae 0.86 mm long with 3 promarginal teeth and 9 retromarginal denticles.

Abdomen 3.64 mm long, 2.43 mm wide.

Epigastric furrow 1.15 mm from tracheal spiracle, spiracle 1.33 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 2.16, 12; II 1.87, 13; III 1.30, 19; IV 2.06, 14. Ventral spination as in male except tibiae II 1-2-0.

Epigynum as in Figure 67, internal genitalia as in Figure 73.

Natural history. Mature males have been taken from early March through mid-July, mature females from mid-March through mid-November. Specimens have been taken in redwood forests, on citrus trees and in houses.

Distribution. Oregon and California (Map 2).

Anyphaena gertschi new species
Map 2; Figures 65, 69, 72, 76

Types. Male holotype, female paratype from Bluff, San Juan Co., Utah, 11 May 1933 (Wilton Ivie), deposited in AMNH. Male and female paratypes from Emery Co., Utah, deposited in MCZ. The specific name is a patronym in honor of Willis J. Gertsch, who first recognized the species as new.

Diagnosis. *Anyphaena gertschi* is a distinctive species easily recognized by the chelate appearance of the tip of the median apophysis of males (Fig. 65) and the large wing-shaped paramedian flaps on the female epigynum (Fig. 72).

Male (Emery Co., Utah). Coloration as in *Anyphaena pacifica* except that carapace has paramedian bands only vaguely indicated and abdomen is pale yellow throughout.

Total length 4.00 mm. Carapace 1.85 mm long, 1.42 mm wide, cephalic width 0.92 mm, clypeus height 0.14 mm. Eyes: diameters (mm): AME 0.09, ALE 0.09, PME 0.09, PLE 0.09; anterior eye row 0.45 mm long, slightly recurved; posterior eye row 0.59 mm long, procurved; MOQ length 0.26 mm, front width 0.22 mm, back width 0.32 mm; eye interdis-

tances (mm): AME-AME 0.04, AME-ALE 0.03, PME-PME 0.14, PME-PLE 0.08, ALE-PLE 0.04.

Sternum 1.12 mm long, 0.85 mm wide. Chelicerae 0.65 mm long with 3 promarginal teeth and 6 retromarginal denticles.

Abdomen 2.11 mm long, 1.31 mm wide. Epigastric furrow 0.67 mm from tracheal spiracle, spiracle 0.76 mm from base of spinnerets.

All coxae with round knobs ventrally. Femora II and III with patches of short, thick setae ventrally. Tibial lengths (mm) and indices: I 2.00, 9; II 1.69, 13; III 1.30, 17; IV 1.87, 12. Ventral spination: tibiae I 2-2-0, II 1-2-0, III, IV 1-2-2; metatarsi I, II 2-2-0, III, IV 2-2-2.

Palpus as in Figures 65, 69.

Female (San Diego Co., California). Coloration as in male.

Total length 5.04 mm. Carapace 2.25 mm long, 1.76 mm wide, cephalic width 0.95 mm, clypeus height 0.12 mm. Eyes: diameters (mm): AME 0.10, ALE 0.13, PME 0.10, PLE 0.13; anterior eye row 0.51 mm long, straight; posterior eye row 0.68 mm long, procurved; MOQ length 0.28 mm, front width 0.26 mm, back width 0.36 mm; eye interdistances (mm): AME-AME 0.06, AME-ALE 0.03, PME-PME 0.16, PME-PLE 0.08, ALE-PLE 0.05.

Sternum 1.28 mm long, 0.90 mm wide. Chelicerae 0.70 mm long with teeth as in male.

Abdomen 3.10 mm long, 2.02 mm wide. Epigastric furrow 0.77 mm from tracheal spiracle, spiracle 1.03 mm from base of spinnerets.

Legs unmodified. Tibial lengths (mm) and indices: I 1.62, 14; II 1.49, 15; III 1.17, 21; IV 1.69, 14. Ventral spination as in male save tibiae III 1-1-0.

Epigynum as in Figure 72, internal genitalia as in Figure 76.

Natural history. Mature males have been taken from late April through late June, mature females from mid-May through late September. Nothing is known of the habits of this species.

Distribution. Southern Utah south to southern California and Arizona (Map 2).

ANYPHAENA ACCENTUATA GROUP

Diagnosis. Members of this group can be immediately differentiated from the other nearctic *Anyphaena* by the presence of only one pair of ventral spines on metatarsi I and II. Only one species occurs in America north of Mexico.

Description. Total length 4-6 mm. Carapace longer than wide, narrowed in front to less than half its maximum width in males, to slightly more than half in females. Clypeus height roughly equal to anterior median eye diameter. Median eyes smaller than laterals. Procurved posterior eye row longer than recurved anterior row. Median ocular quadrangle longer than wide in front, wider in back than long. Anterior median eyes separated by less than their diameter, closer to anterior laterals. Posterior medians separated by 1.5 times their diameter, closer to posterior laterals. Anterior laterals separated by their radius from posterior laterals. Sternum longer than wide, unmodified. Chelicerae with 3 promarginal teeth and 5-7 retrolateral denticles. Abdomen longer than wide, tracheal spiracle midway between epigastric furrow and base of spinnerets. Leg formula 1423, legs unmodified. Metatarsi I and II with one pair of ventral spines. Palpus with short median apophysis, short conductor and conspicuous embolus. Cymbial groove compressed to retrolateral side of cymbium. Epigynum with hood. Internal genitalia with anterior membranous dorsal cover.

Variation. No significant variation was detected in *Anyphaena aperta*.

Anyphaena accentuata (Walckenaer) Figure 134

Aranca accentuata Walckenaer, 1802, Faun. Paris, 2: 226. Type lost, presumed destroyed.

Auyphaena accentuata, Roewer, 1954, Katalog der Araneae, 2: 522. Bonnet, 1955, Bibliographia Araneorum, 2: 338.

A drawing of the palpus of this European spider, type species of the genus *Anyphaena*, is included for purposes of comparison to *A. aperta*. Confusion exists between *Anyphaena accentuata*, *A. obscura* (Sundevall) and *A. sabina* L. Koch, and the female is therefore not illustrated and no description is given. The male illustrated is from England.

Anyphaena aperta (Banks)

Map 2; Figures 135–137

Gayenna aperta Banks, 1921, Proc. California Acad. Sci., 11: 100, fig. 3 (♀). Female holotype from Olympia, Washington, in MCZ, examined.

Anyphaena aperta, Bryant, 1931, Psyche, 38: 114, pl. 8, fig. 35, ♀. Fox, 1938, Iowa State Coll. J. Sci., 12: 238, pl. 1, fig. 6, ♂. Roewer, 1954, Katalog der Araneae 2: 528. Bonnet, 1955, Bibliographia Araneorum, 2: 342.

Diagnosis. In addition to the diagnostic character of the species group, *Anyphaena aperta* can readily be distinguished from all other North American anyphaenids by the sharply pointed median apophysis of males (Fig. 135) and the membranous dorsal cover of the internal genitalia of females (Fig. 137). Although the distribution indicates that this might be an introduced species, no specimens or described species from the Palearctic or Oriental regions resemble *Anyphaena aperta*.

Male (Yamhill Co., Oregon). Total length 4.32 mm. Carapace 1.98 mm long, 1.63 mm wide; cephalic width 0.74 mm, clypeus height 0.08 mm, light orange-brown, darker towards sides, with two dark paramedian longitudinal bands. Eyes: diameters (mm): AME 0.07, ALE 0.11, PME 0.09, PLE 0.11; anterior eye row 0.44 mm long, recurved; posterior eye row 0.62 mm long, procurved; MOQ length 0.26 mm, front width 0.20 mm, back width 0.32 mm; eye interdistances (mm): AME–AME 0.05, AME–ALE 0.03, PME–PME 0.14, PME–PLE 0.10, ALE–PLE 0.06.

Sternum 1.04 mm long, 0.89 mm wide, pale orange with translucent border and

darkened extensions to coxae. Chelicerae 0.55 mm long with 3 promarginal teeth and 5 retromarginal denticles, orange-brown with boss outlined in gray. Labium and endites pale orange, darkest proximally. Endites not invaginated.

Abdomen 2.52 mm long, 1.51 mm wide, pale white with transverse rows of dark markings, venter pale with a clump of thick elongate setae posteriorly. Epigastric furrow 0.86 mm from tracheal spiracle, spiracle 0.74 mm from base of spinnerets.

Legs pale yellow, unmodified. Tibial lengths (mm) and indices: I 1.87, 12; II 1.70, 13; III 1.27, 18; IV 1.73, 14. Ventral spination: tibiae I, II 2–2–2, III 1–2–2, IV 2–2–2; metatarsi I, II 2–0–0, III 2–0–2, IV 2–2–2.

Palpus as in Figure 135.

Female (Curry Co., Oregon). Coloration as in male.

Total length 5.83 mm. Carapace 2.65 mm long, 2.05 mm wide, cephalic width 1.17 mm, clypeus height 0.09 mm. Eyes: diameters (mm): AME 0.10, ALE 0.12, PME 0.12, PLE 0.13; anterior eye row 0.61 mm long, slightly recurved; posterior eye row 0.87 mm long, procurved; MOQ length 0.35 mm, front width 0.30 mm, back width 0.44 mm; eye interdistances (mm): AME–AME 0.09, AME–ALE 0.05, PME–PME 0.19, PME–PLE 0.14, ALE–PLE 0.07.

Sternum 1.46 mm long, 1.04 mm wide. Chelicerae 0.80 mm long with 3 promarginal teeth and 7 retromarginal denticles.

Abdomen 4.00 mm long, 2.60 mm wide, without thick setae ventrally. Epigastric furrow 0.81 mm from tracheal spiracle, spiracle 1.03 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 1.87, 16; II 1.77, 16; III 1.31, 22; IV 1.87, 17. Ventral spination as in male except tibiae I 2–2–0 and IV 1–2–2.

Epigynum as in Figure 136, internal genitalia as in Figure 137.

Natural history. Mature males have been taken from late March through early September, mature females from late March

through early November. Specimens have been taken from redwoods and red cedars.

Distribution. Pacific coast from British Columbia south to southern California (Map 2).

Wulfila O. P.-Cambridge

Wulfila O. P.-Cambridge, 1895, *Biologia Centrali Americana*, Aran., 1: 158. Type species *Wulfila pallidus* O. P.-Cambridge, 1895, designated by Simon, 1897, *Hist. Natur. Araign.*, 2: 103.

Cragus O. P.-Cambridge, 1896, *Biologia Centrali Americana*, Aran., 1: 215. Type species by monotypy *Cragus pallidus* O. P.-Cambridge, 1896. NEW SYNONYMY.

Anyphaenella Bryant, 1931, *Psyche*, 38: 115. Type species by original designation *Clubiona saltabunda* Hentz, 1847. NEW SYNONYMY.

Diagnosis. *Wulfila* may be easily recognized by their long, thin, pale white legs. Leg I in particular is greatly elongated, with its tibial index usually 5 or less. Palpal structure indicates that this genus is closely related to *Anyphaena*. There are probably more than fifty species in this genus; most occur in Central America and the West Indies.

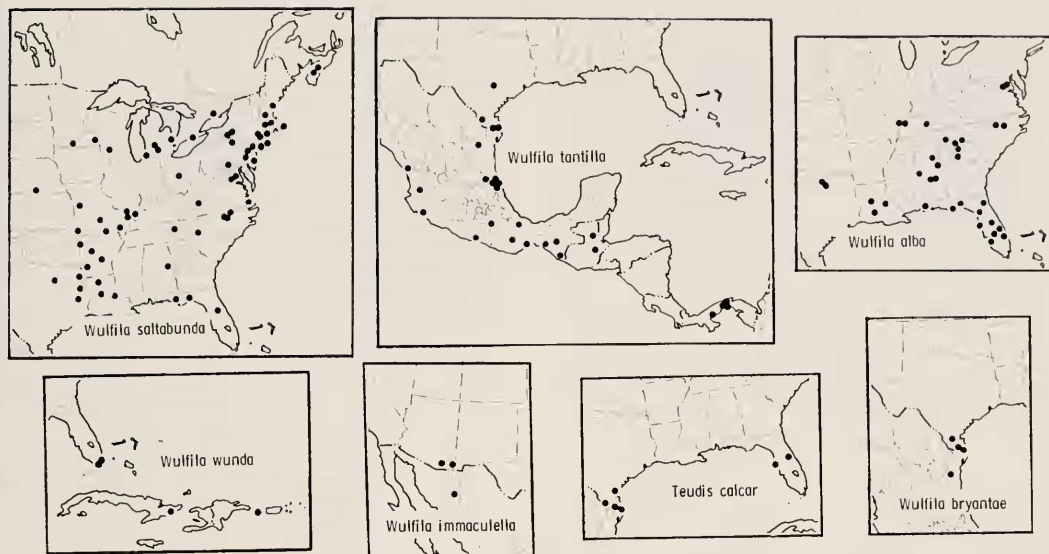
Description. Total length 2.5–4.5 mm. Carapace longer than wide, narrowed in front to from one-half to two-thirds its maximum width. Clypeus height greater than anterior median eye diameter. Posterior median, posterior lateral and anterior lateral eyes subequal in size, somewhat larger than anterior medians. Procurved posterior eye row longer than straight anterior row. Median ocular quadrangle twice as wide in back as in front. Anterior median eyes separated by less than their diameter, by roughly their diameter from anterior laterals. Posterior medians separated by almost twice their diameter, by their diameter from posterior laterals. Anterior laterals separated by roughly their diameter from posterior laterals. Sternum longer than wide, unmodified. Chelicerae with 3–6 promarginal teeth, often on carina, and 5–10 retromarginal denticles. Abdomen longer than wide, tracheal spiracle

midway between epigastric furrow and base of spinnerets. Leg formula 1423, legs long, thin, pale white. Leg I greatly elongated. Metatarsi I and II with two pairs of ventral spines. Coxae of males often with spurs and knobs; leg III spination often reduced. Palpus with an elongated median apophysis, enlarged conductor and conspicuous embolus. Retrolateral tibial apophysis greatly expanded except in *W. wunda*. Epigyna and internal genitalia small and diverse.

Variation. None of the species in this genus show any significant individual or geographic intraspecific variation in structure, size or coloration.

KEY TO SPECIES

- | | |
|--|--------------------|
| 1a. Carapace and abdomen with dark markings | <i>saltabunda</i> |
| 1b. Carapace and abdomen without dark markings | 2 |
| 2a. Males | 3 |
| 2b. Females | 7 |
| 3a. At least one pair of coxae modified with spurs or knobs | 4 |
| 3b. All coxae unmodified | <i>alba</i> |
| 4a. Coxae I and/or II modified with spurs or knobs | 5 |
| 4b. Coxae III and/or IV modified with spurs or knobs | 6 |
| 5a. Retrolateral tibial apophysis more than half the tibial length (Fig. 93) ... | <i>bryantae</i> |
| 5b. Retrolateral tibial apophysis less than half the tibial length (Fig. 95) | <i>wunda</i> |
| 6a. Retrolateral tibial apophysis greatly expanded at tip (Fig. 86) | <i>tantilla</i> |
| 6b. Retrolateral tibial apophysis not greatly expanded at tip (Fig. 88) | <i>immaculella</i> |
| 7a. Epigynum with long ducts (Figs. 91, 97, 98) | 8 |
| 7b. Epigynum without long ducts (Figs. 90, 96) | 10 |
| 8a. Epigynum with a heart-shaped atrium (Fig. 97) | <i>wunda</i> |
| 8b. Epigynum without a heart-shaped atrium .. | 9 |
| 9a. Epigynal ducts terminating far anterior of epigynal openings (Fig. 91) | <i>tantilla</i> |
| 9b. Epigynal ducts terminating near epigynal openings (Fig. 98) | <i>immaculella</i> |
| 10a. Epigynum with anterolateral flaps, without a medial ridge (Fig. 90) | <i>alba</i> |
| 10b. Epigynum without anterolateral flaps, with a medial ridge (Fig. 96) | <i>bryantae</i> |



Map 3. Distributions of *Teudis calcar*, *Wulfila alba*, *W. bryantae*, *W. immaculella*, *W. saltabunda*, *W. tantilla* and *W. wunda*.

***Wulfila pallidus* O. P.-Cambridge**
Figure 144

Wulfila pallidus O. P.-Cambridge, 1895, Biologia Centrali Americana, Aran., 1: 159, pl. 19, fig. 11 (♀). Female holotype from Teapa, Tabasco, Mexico, in BMNH, examined. Bonnet, 1959, Bibliographia Araneorum, 2: 4832.

Wulfila pallida, Simon, 1897, Hist. Natur. Araign., 2: 94. Roewer, 1954, Katalog der Araneae, 2: 554.

Wulfila pallida, Simon, 1897, Hist. Natur. Araign., 2: 103.

This Mexican species, though belonging to a distinct species group, closely resembles the North American *Wulfila* in body form, leg length and coloration. It is the type species of *Wulfila*.

***Wulfila saltabunda* (Hentz),**
new combination

Map 3; Figures 81, 82, 89, 99

Clubiona saltabunda Hentz, 1847, J. Boston Soc. Natur. Hist., 5: 453, pl. 23, fig. 23 (♀). Female holotype from Alabama in Boston Soc. Natur. Hist. (Boston Museum of Science), destroyed by beetles.

Anyphaena saltabunda, Emerton, 1890, Trans. Connecticut Acad. Sci., 8: 187, figs. 4-4d, ♂,

♀. Emerton, 1902, Common Spiders, p. 14, figs. 46, 47, ♂, ♀.

Gayenna saltabunda, Comstock, 1912, Spider Book, p. 563, figs. 638, 639, ♂, ♀.

Anyphaenella saltabunda, Bryant, 1931, Psyche, 38: 116, pl. 7, figs. 18, 22, ♂, ♀. Comstock, 1940, Spider Book, rev. ed., p. 576, figs. 638, 639, ♂, ♀. Kaston, 1948, Bull. Connecticut Geol. Natur. Hist. Surv., 70: 406, figs. 1465-1470, ♂, ♀. Roewer, 1954, Katalog der Araneae, 2: 530. Bonnet, 1955, Bibliographia Araneorum, 2: 349.

Diagnosis. *Wulfila saltabunda* is the only species in this area which has dark markings on the carapace and abdomen. In addition, the shape of the retrolateral tibial apophysis (Fig. 82) and spermathecae (Fig. 99) serve to distinguish it from *W. alba*, its closest relative.

Male (Suffolk Co., New York). Total length 3.06 mm. Carapace 1.46 mm long, 1.04 mm wide, cephalic width 0.54 mm, clypeus height 0.07 mm, pale white with thin dark border and two dark paramedian longitudinal bands. Eyes: diameters (mm): AME 0.05, ALE 0.09, PME 0.09, PLE 0.09; anterior eye row 0.39 mm long, straight; posterior eye row 0.50 mm long,

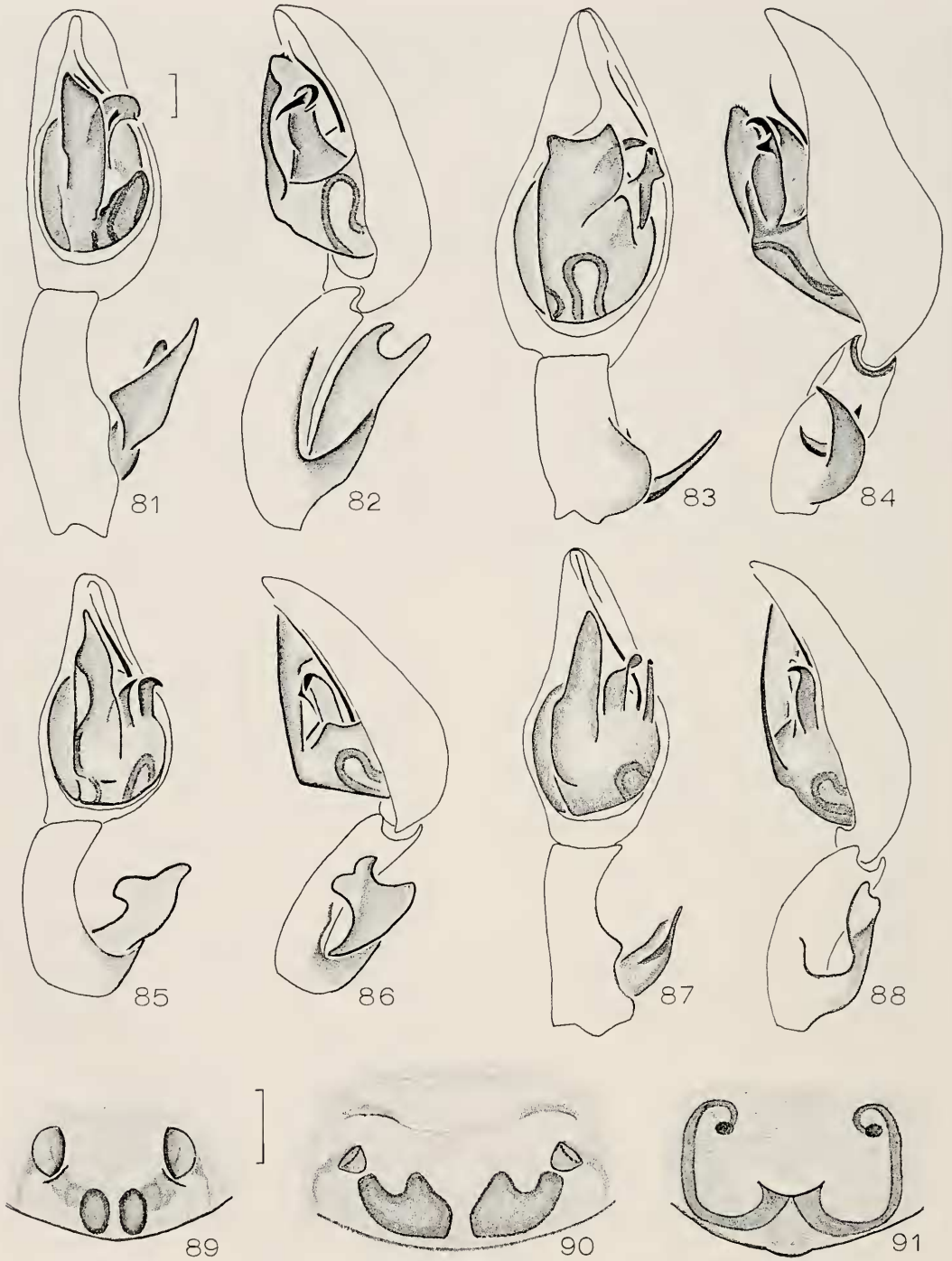


Plate 7

Figures 81, 83, 85, 87. Left palpi, ventral view. Figures 82, 84, 86, 88. Left palpi, retrolateral view. Figures 89-91. Epigyna, ventral view. 81, 82, 89. *Wullila saltabunda* (Hentz). 83, 84, 90. *Wullila alba* (Hentz). 85, 86, 91. *Wullila tantilla* Chickering. 87, 88. *Wullila immaculella* (Gertsch).

procurved; MOQ length 0.22 mm, front width 0.14 mm, back width 0.30 mm; eye interdistances (mm): AME-AME 0.04, AME-ALE 0.03, PME-PME 0.12, PME-PLE 0.06, ALE-PLE 0.03.

Sternum 0.86 mm long, 0.59 mm wide, pale white with thick translucent border with extensions to coxae and large triangular dark spots between coxae. Chelicerae 0.40 mm long with 6 promarginal teeth and 7 retromarginal denticles, pale white with boss outlined in gray and several very long setae. Labium and endites pale white, endites not invaginated at middle.

Abdomen 1.60 mm long, 0.97 mm wide, pale white with transverse rows of dark spots, venter with thin dark median line anterior of epigastric furrow and two large median dark spots between epigastric furrow and spinnerets. Epigastric furrow 0.40 mm from tracheal spiracle, spiracle 0.45 mm from base of spinnerets.

Legs pale white, unmodified, though leg III spination reduced. Tibial length (mm) and indices: I 2.70, 4; II 1.42, 9; III 1.08, 13; IV 1.55, 10. Ventral spination: tibiae I 2-2-0, II 1-1-0, III 0-1-0, IV 1-1-0; metatarsi I, II 2-2-0, III 0-0-0, IV 1-2-2.

Palpus as in Figures 81, 82.

Female (Suffolk Co., New York). Coloration as in male.

Total length 4.18 mm. Carapace 1.78 mm long, 1.28 mm wide, cephalic width 0.70 mm, clypeus height 0.09 mm. Eyes: diameters (mm): AME 0.06, ALE 0.09, PME 0.09, PLE 0.10; anterior eye row 0.43 mm long, straight; posterior eye row 0.58 mm long, procurved. MOQ length 0.28 mm, front width 0.15 mm, back width 0.32 mm; eye interdistances (mm): AME-AME 0.04, AME-ALE 0.05, PME-PME 0.14, PME-PLE 0.08, ALE-PLE 0.04.

Sternum 0.99 mm long, 0.74 mm wide. Chelicerae 0.56 mm long with 6 promarginal teeth and 10 retromarginal denticles.

Abdomen 2.47 mm long, 2.27 mm wide. Epigastric furrow 0.85 mm from tracheal spiracle, spiracle 0.85 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 2.56, 5; II 1.31, 12; III 0.90, 20; IV 1.67, 12. Ventral spination as in male except tibiae II 2-2-0 and III 1-1-0 and metatarsi III 2-1-0.

Epigynum as in Figure 89, internal genitalia as in Figure 99.

Natural history. Mature males have been taken from mid-April through late August, mature females from late April through late August. Specimens have been taken by sweeping and on apple trees.

Distribution. Nova Scotia west to Minnesota and Nebraska, south to Florida and eastern Texas (Map 3).

Wulfila alba (Hentz),
new combination
Map 3; Figures 83, 84, 90, 100

Chubiona albens Hentz, 1847, J. Boston Soc. Natur. Hist., 5: 454, pl. 23, fig. 24 (♂). Male holotype from Alabama in Boston Soc. Natur. Hist. (Boston Museum of Science), destroyed by beetles.

Anyphaena albens, Marx, 1883, in Howard, A List of the Invertebrate Fauna of South Carolina, p. 24.

Chiracanthium albens, Marx, 1890, Proc. U.S. Nat. Mus., 12: 513.

Anyphaenella alba, Bryant, 1931, Psyche, 38: 116, pl. 7, figs. 20, 21, ♂, ♀. Roewer, 1954, Katalog der Araneae, 2: 530. Bonnet, 1955, Bibliographia Araneorum 2: 349.

Diagnosis. *Wulfila alba* is closest to *W. saltabunda* but may be distinguished from it by its lack of dark markings, the spur-like retrolateral tibial apophysis (Fig. 84) and the shape of the spermathecae (Fig. 100).

Male (Orange Co., Florida). Coloration as in *Wulfila saltabunda* except that dark markings are entirely absent.

Total length 3.65 mm. Carapace 1.57 mm long, 1.21 mm wide, cephalic width 0.59 mm, clypeus height 0.07 mm. Eyes: diameters (mm): AME 0.04, ALE 0.07, PME 0.07, PLE 0.07; anterior eye row 0.36 mm long, straight; posterior eye row 0.49 mm long, procurved; MOQ length 0.22 mm, front width 0.12 mm, back width

0.26 mm; eye interdistances (mm): AME-AME 0.04, AME-ALE 0.05, PME-PME 0.11, PME-PLE 0.06, ALE-PLE 0.04.

Sternum 0.95 mm long, 0.70 mm wide. Chelicerae 0.45 mm long with 6 promarginal teeth and 7 retromarginal denticles.

Abdomen 2.12 mm long, 1.15 mm wide. Epigastric furrow 0.67 mm from tracheal spiracle, spiracle 0.79 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 3.13, 4; II 1.85, 7; III 1.12, 13; IV 2.03, 6. Ventral spination: tibiae I 2-2-0, II 1-2-0, III 0-1-0, IV 1-1-0; metatarsi I, II, III 2-2-0, IV 1-1-2.

Palpus as in Figures 83, 84.

Female (Indian River Co., Florida). Coloration as in male.

Total length 4.00 mm. Carapace 1.62 mm long, 1.28 mm wide; cephalic width 0.58 mm, clypeus height 0.06 mm. Eyes: diameters (mm): AME 0.04, ALE 0.07, PME 0.08, PLE 0.08; anterior eye row 0.40 mm long, straight; posterior eye row 0.54 mm long, procurved; MOQ length 0.25 mm, front width 0.14 mm, back width 0.29 mm; eye interdistances (mm): AME-AME 0.05, AME-ALE 0.06, PME-PME 0.13, PME-PLE 0.10, ALE-PLE 0.06.

Sternum 0.92 mm long, 0.74 mm wide. Chelicerae 0.41 mm long with 6 promarginal teeth and 9 retromarginal denticles.

Abdomen 2.66 mm long, 1.51 mm wide. Epigastric furrow 0.68 mm from tracheal spiracle, spiracle 0.88 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 3.13, 4; II 1.91, 8; III 1.05, 13; IV 2.07, 8. Ventral spination as in male except tibiae II 2-2-0 and III 1-2-0 and metatarsi IV 2-2-2.

Epigynum as in Figure 90, internal genitalia as in Figure 100.

Natural history. Mature males have been taken from late March through early August, mature females from early April through late August. Specimens have been taken by sweeping, on pines, and in Malaise and pitfall traps.

Distribution. Maryland west to southern Illinois, south to Florida and eastern Texas (Map 3).

Wulfila tantilla Chickering

Map 3; Figures 85, 86, 91, 101

Cragus pallidus O. P.-Cambridge, 1896, *Biologia Centrali Americana, Aran.*, 1: 215, pl. 26, fig. 10 (♂). Male holotype from Santa Ana, Guatemala, in BMNH, examined. Preoccupied by *Wulfila pallidus* O. P.-Cambridge, 1895. Roewer, 1954, *Katalog der Araneae*, 2: 535. Bonnet, 1956, *Bibliographia Araneorum*, 2: 1246.

Wulfila tantilla Chickering, 1940, *Trans. Amer. Microsc. Soc.*, 59: 119, figs. 64-66 (♂). Male holotype from El Valle, Panama, in MCZ, examined. Roewer, 1954, *Katalog der Araneae*, 2: 555. NEW SYNONYMY.

Wulfila tenella Chickering, 1940, *Trans. Amer. Microsc. Soc.*, 59: 120, figs. 67, 68 (♀). Female holotype from El Valle, Panama, in MCZ, examined. Roewer, 1954, *Katalog der Araneae*, 2: 555. NEW SYNONYMY.

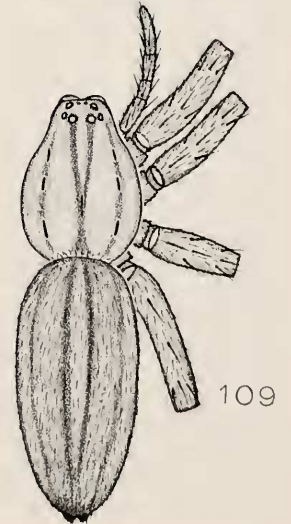
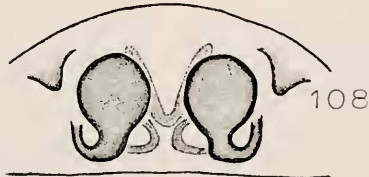
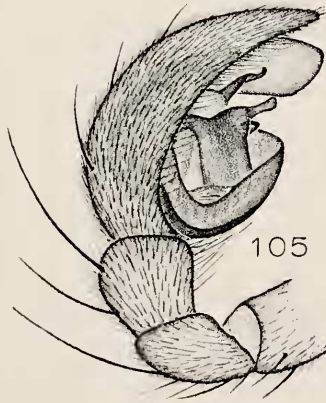
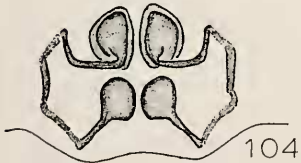
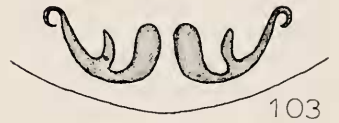
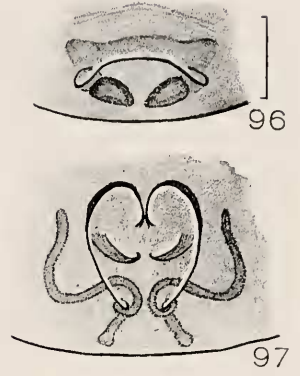
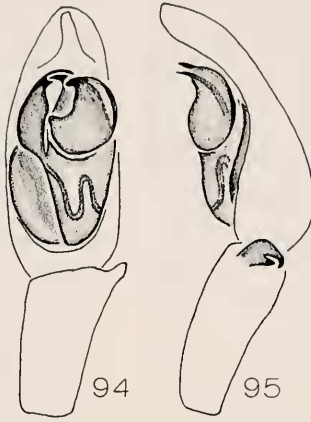
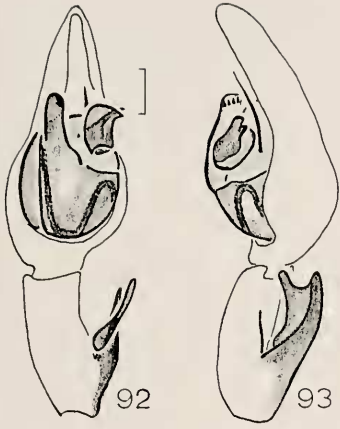
Diagnosis. *Wulfila tantilla* is very closely related to *W. immaculella* but may be distinguished by the greatly expanded tip of the retrolateral tibial apophysis (Fig. 86) and by the epigynal ducts terminating far anterior of the epigynal openings (Fig. 91).

Male (Webb Co., Texas): Coloration as in *Wulfila alba*, except that the posterior declivity of the carapace is darkened.

Total length 3.02 mm. Carapace 1.62 mm long, 1.12 mm wide, cephalic width 0.63 mm, clypeus height 0.09 mm. Eyes:

Plate 8

Figures 92, 94, 107. Left palpi, ventral view. Figures 93, 95, 105. Left palpi, retrolateral view. Figures 96-98, 106. Epigyna, ventral view. Figures 99-104, 108. Internal genitalia, dorsal view. Figure 109. Body, dorsal view. 92, 93, 96, 102. *Wulfila bryantae* new species. 94, 95, 97, 104. *Wulfila wunda* new species. 98, 103. *Wulfila immaculella* (Gertsch). 99. *Wulfila saltabunda* (Hentz). 100. *Wulfila alba* (Hentz). 101. *Wulfila tantilla* Chickering. 105-109. *Oxysoma cubana* Banks. (Figs. 105, 106, 109 by Wilton Ivie, not to scale.)



diameters (mm): AME 0.06, ALE 0.07, PME 0.09, PLE 0.09; anterior eye row 0.41 mm long, straight; posterior eye row 0.53 mm long, procurved; MOQ length 0.23 mm, front width 0.16 mm, back width 0.30 mm; eye interdistances (mm): AME-AME 0.05, AME-ALE 0.04, PME-PME 0.13, PME-PLE 0.06, ALE-PLE 0.04.

Sternum 0.74 mm long, 0.63 mm wide. Chelicerae 0.58 mm long with 5 promarginal teeth on a carina and 8 retromarginal denticles.

Abdomen 1.57 mm long, 0.97 mm wide. Epigastric furrow 0.50 mm from tracheal spiracle, spiracle 0.44 mm from base of spinnerets.

Coxae III and IV with two small knobs. Tibial lengths (mm) and indices: I 2.77, 3; II 1.51, 9; III 0.86, 15; IV 1.51, 9. Ventral spination: tibiae I, II 2-2-0, III, IV 1-2-0; metatarsi I, II 2-2-0, III, IV 2-2-2.

Palpus as in Figures 85, 86.

Female (Hidalgo Co., Texas). Coloration as in male of *Wulfila alba*.

Total length 2.92 mm. Carapace 1.34 mm long, 0.99 mm wide, cephalic width 0.67 mm, clypeus height 0.08 mm. Eyes: diameters (mm): AME 0.05, ALE 0.06, PME 0.06, PLE 0.06; anterior eye row 0.37 mm long, straight; posterior eye row 0.50 mm long, procurved; MOQ length 0.20 mm, front width 0.16 mm, back width 0.26 mm; eye interdistances (mm): AME-AME 0.05, AME-ALE 0.04, PME-PME 0.13, PME-PLE 0.06, ALE-PLE 0.05.

Sternum 0.89 mm long, 0.61 mm wide. Chelicerae 0.50 mm long with 4 promarginal teeth and 6 retromarginal denticles.

Abdomen 1.62 mm long, 1.15 mm wide. Epigastric furrow 0.59 mm from tracheal spiracle, spiracle 0.52 mm from base of spinnerets.

Legs unmodified. Tibial lengths (mm) and indices: I 2.36, 5; II 1.21, 11; III 0.77, 18; IV 1.40, 11. Ventral spination as in male save tibiae IV 1-1-0.

Epigynum as in Figure 91, internal genitalia as in Figure 101.

Natural history. Mature males have been

taken from mid-April through mid-October, mature females apparently year-round. Nothing is known of the habits of this species.

Distribution. Southern Texas south to the Canal Zone (Map 3).

Wulfila immaculella (Gertsch),
new combination

Map 3; Figures 87, 88, 98, 103

Amyphaenella immaculella Gertsch, 1933, Amer. Mus. Novitates, No. 637: 9, fig. 14 (♀). Female holotype from Sabino Basin, Santa Catalina Mountains, Arizona, in AMNH, examined. Roewer, 1954, Katalog der Araneae, 2: 530. Bonnet, 1955, Bibliographia Araneorum, 2: 349.

Diagnosis. *Wulfila immaculella* is very closely related to *W. tantilla* but may be distinguished by the unexpanded tip of the retrolateral tibial apophysis (Fig. 88) and by the epigynal ducts terminating near the epigynal openings (Fig. 98).

Male (Sonora, Mexico). Coloration as in *Wulfila alba*.

Total length 3.60 mm. Carapace 1.64 mm long, 1.12 mm wide, cephalic width 0.67 mm, clypeus height 0.08 mm. Eyes: diameters (mm): AME 0.05, ALE 0.08, PME 0.08, PLE 0.08; anterior eye row 0.40 mm long, straight; posterior eye row 0.52 mm long, procurved; MOQ length 0.22 mm, front width 0.14 mm, back width 0.31 mm; eye interdistances (mm): AME-AME 0.05, AME-ALE 0.05, PME-PME 0.14, PME-PLE 0.08, ALE-PLE 0.04.

Sternum 0.90 mm long, 0.68 mm wide. Chelicerae 0.51 mm long with 4 promarginal teeth and 5 retromarginal denticles.

Abdomen 2.07 mm long, 1.00 mm wide. Epigastric furrow 0.63 mm from tracheal spiracle, spiracle 0.74 mm from base of spinnerets.

Coxae III with one, coxae IV with two small knobs. Tibial lengths (mm) and indices: I 3.42, 3; II 2.05, 5; III 1.30, 11; IV 2.11, 8. Ventral spination: tibiae I 2-2-0, II 1-2-0, III 0-1-0, IV 1-1-0; metatarsi I, II 2-2-0, III, IV 2-1-2.

Palpus as in Figures 87, 88.

Female (Sonora, Mexico). Coloration as in male of *Wulfila alba*.

Total length 3.64 mm. Carapace 1.58 mm long, 1.08 mm wide, cephalic width 0.61 mm, clypeus height 0.10 mm. Eyes: diameters (mm): AME 0.05, ALE 0.07, PME 0.08, PLE 0.07; anterior eye row 0.40 mm long, straight; posterior eye row 0.53 mm long, procurved; MOQ length 0.22 mm, front width 0.15 mm, back width 0.30 mm; eye interdistances (mm): AME-AME 0.05, AME-ALE 0.04, PME-PME 0.12, PME-PLE 0.08, ALE-PLE 0.04.

Sternum 0.94 mm long, 0.71 mm wide. Chelicerae 0.53 mm long with teeth as in male.

Abdomen 2.05 mm long, 1.40 mm wide. Epigastric furrow 0.65 mm from tracheal spiracle, spiracle 0.74 mm from base of spinnerets.

Legs unmodified. Tibial lengths (mm) and indices: I 2.81, 4; II 1.62, 9; III 0.92, 15; IV 1.75, 8. Ventral spination as in male except tibiae II 2-2-0 and III 1-1-0.

Epigynum as in Figure 98, internal genitalia as in Figure 103.

Natural history. Mature males have been taken in July, mature females in June and July. One male was taken on *Platanus* sp.

Distribution. Southern Arizona and Sonora (Map 3).

Wulfila bryantae new species

Map 3; Figures 92, 93, 96, 102

Types. Male holotype, female paratype from 5 miles east of Edinburg, Hidalgo Co., Texas, 20 April 1937 (S. Mulaik), deposited in AMNH. Male and female paratypes from Jim Wells and Cameron Counties, Texas, deposited in MCZ. The specific name is a patronym in honor of Miss Elizabeth Bryant, in recognition of her pioneering work on North American anyphaenids.

Diagnosis. *Wulfila bryantae* is a distinctive species easily recognized by its stubby median apophysis (Fig. 92) and the medial ridge on the epigynum (Fig. 96).

Male (Hidalgo Co., Texas). Coloration as in *Wulfila alba*.

Total length 3.35 mm. Carapace 1.44 mm long, 1.08 mm wide, cephalic width 0.81 mm, clypeus height 0.10 mm. Eyes: diameters (mm): AME 0.06, ALE 0.06, PME 0.07, PLE 0.07; anterior eye row 0.49 mm long, slightly recurved; posterior eye row 0.62 mm long, procurved; MOQ length 0.26 mm, front width 0.20 mm, back width 0.30 mm; eye interdistances (mm): AME-AME 0.07, AME-ALE 0.07, PME-PME 0.15, PME-PLE 0.13, ALE-PME 0.06.

Sternum 0.97 mm long, 0.55 mm wide. Chelicerae 0.73 mm long with 3 promarginal teeth on a carina and 7 retromarginal denticles.

Abdomen 1.80 mm long, 1.12 mm wide. Epigastric furrow 0.56 mm from tracheal spiracle, spiracle 0.68 mm from base of spinnerets.

Coxae I with a small knob, coxae II with two spurs. Tibial lengths (mm) and indices: I 2.76, 4; II 1.85, 7; III 0.92, 15; IV 1.89, 7. Ventral spination: tibiae I, II 2-2-0, III 1-2-0, IV 1-1-0; metatarsi I, II 2-2-0, III, IV 2-1-2.

Palpus as in Figures 92, 93.

Female (Hidalgo Co., Texas). Coloration as in male of *Wulfila alba*.

Total length 3.78 mm. Carapace 1.44 mm long, 0.99 mm wide, cephalic width 0.74 mm, clypeus height 0.07 mm. Eyes: diameters (mm): AME 0.06, ALE 0.07, PME 0.06, PLE 0.07; anterior eye row 0.42 mm long, slightly recurved; posterior eye row 0.59 mm long, procurved; MOQ length 0.23 mm, front width 0.17 mm, back width 0.27 mm; eye interdistances (mm): AME-AME 0.06, AME-ALE 0.05, PME-PME 0.14, PME-PLE 0.13, ALE-PLE 0.06.

Sternum 0.74 mm long, 0.64 mm wide. Chelicerae 0.62 mm long with 5 promarginal teeth and 5 retromarginal denticles.

Abdomen 2.59 mm long, 2.16 mm wide. Epigastric furrow 0.90 mm from tracheal spiracle, spiracle 0.88 mm from base of spinnerets.

Legs unmodified. Tibial lengths (mm) and indices: I 2.24, 5; II 1.37, 9; III 0.72, 19; IV 1.35, 10. Ventral spination as in male except tibiae III, IV 2-2-0 and metatarsi III, IV 2-0-2.

Epigynum as in Figure 96, internal genitalia as in Figure 102.

Natural history. Mature males have been taken from late April through early June, mature females from early April through early December. Nothing is known of the habits of this species.

Distribution. Southern Texas and Tamaulipas (Map 3).

Wulfila wunda new species

Map 3; Figures 94, 95, 97, 104

Wulfila immaculata, Bryant (not Banks), 1936, *Psyche*, 43: 98, fig. 1, ♂. Male allotype from Brichell Hammock, Florida Keys, in MCZ, examined. Not *Wulfila immaculata* Banks, 1914, *Bull. Amer. Mus. Natur. Hist.*, 33: 640, pl. 43, fig. 7, ♀. Female holotype from Vinales, Pinar del Rio, Cuba, in AMNH, examined.

Types. Male holotype, female paratype from Tavernier, Monroe Co., Florida, 16 February 1951 (A. M. Nadler), deposited in AMNH. Male and female paratypes from Dade Co., Florida, deposited in MCZ. The specific name is an arbitrary combination of letters.

Diagnosis. *Wulfila wunda* is a distinctive species the genitalia of which are quite different from those of the other *Wulfila* in America north of Mexico: the retrolateral tibial apophysis is very short (Fig. 95) and the epigynum has an atrium (Fig. 97).

Male (Dade Co., Florida). Coloration as in *Wulfila alba*.

Total length 3.42 mm. Carapace 1.55 mm long, 1.08 mm wide, cephalic width 0.68 mm, clypeus height 0.06 mm. Eyes: diameters (mm): AME 0.05, ALE 0.07, PME 0.08, PLE 0.08; anterior eye row 0.48 mm long, straight; posterior eye row 0.59 mm long, procurved; MOQ length 0.20 mm, front width 0.14 mm, back width 0.29 mm; eye interdistances (mm): AME-

AME 0.05, AME-ALE 0.09, PME-PME 0.14, PME-PLE 0.12, ALE-PLE 0.04.

Sternum 1.06 mm long, 0.70 mm wide. Chelicerae 0.85 mm long with 4 promarginal teeth and 6 retromarginal denticles.

Abdomen 1.91 mm long, 1.01 mm wide. Epigastric furrow 0.70 mm from tracheal spiracle, spiracle 0.76 mm from base of spinnerets.

Coxae II with a small knob. Tibial lengths (mm) and indices: I 4.10, 3; II 1.87, 8; III 1.01, 15; IV 2.05, 7. Ventral spination: tibiae I, II 2-2-0, III 0-1-0, IV 0-2-0; metatarsi I, II 2-2-0, III 0-2-0, IV 2-1-2.

Palpus as in Figures 94, 95.

Female (Dade Co., Florida). Coloration as in male of *Wulfila alba*.

Total length 3.74 mm. Carapace 1.55 mm long, 1.15 mm wide, cephalic width 0.72 mm, clypeus height 0.07 mm. Eyes: diameters (mm): AME 0.04, ALE 0.06, PME 0.07, PLE 0.07; anterior eye row 0.49 mm long, straight; posterior eye row 0.59 mm long, procurved; MOQ length 0.20 mm, front width 0.15 mm, back width 0.30 mm; eye interdistances (mm): AME-AME 0.06, AME-ALE 0.10, PME-PME 0.16, PME-PLE 0.12, ALE-PME 0.04.

Sternum 0.90 mm long, 0.67 mm wide. Chelicerae 0.65 mm long with 5 promarginal teeth and 9 retromarginal denticles.

Abdomen 2.16 mm long, 1.15 mm wide. Epigastric furrow 0.74 mm from tracheal spiracle, spiracle 0.83 mm from base of spinnerets.

Legs unmodified. Tibial lengths (mm) and indices: I 3.13, 4; II 1.44, 10; III 0.76, 20; IV 1.58, 9. Ventral spination as in male except tibiae III 1-2-0 and IV 0-1-0 and metatarsi III 1-2-0 and IV 1-2-2.

Epigynum as in Figure 97, internal genitalia as in Figure 104.

Natural history. Mature males have been taken from mid-February through mid-May, mature females apparently year-round. Nothing is known of the habits of this species.

Distribution. Southern Florida, Cuba, and Mona Island (Map 3).

Aysha Keyserling

Aysha Keyserling, 1891, Spinn. Amer. (Brasil. Spinn.), 3: 83, 129. Type species *Aysha prospera* Keyserling, 1891, designated by Simon, 1897, Hist. Natur. Araig., 2: 104.

Diagnosis. *Aysha* is easily recognized by the greatly advanced placement of the tracheal spiracle, located just behind the epigastric furrow. The genitalic structure is quite different from that of *Anyphaena* and *Wulfila* and the genus undoubtedly represents a different evolutionary line. There are probably more than thirty species in this genus; they occur commonly in both North and South America.

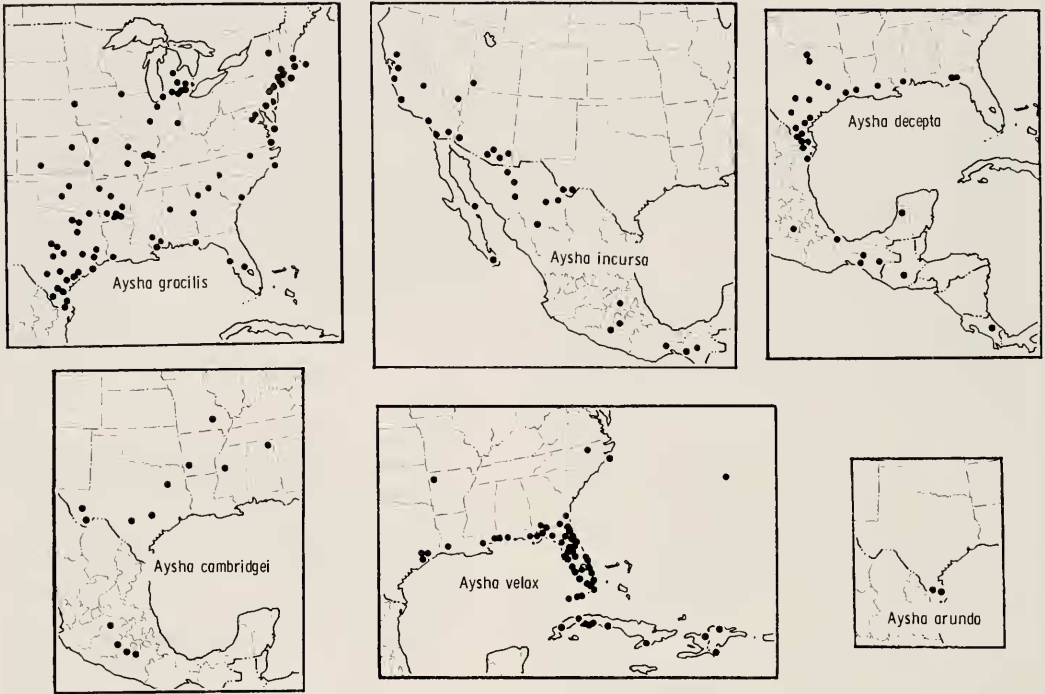
Description. Total length 4–9 mm. Carapace longer than wide, narrowed in front to more than half its maximum width. Clypeus height roughly equal to anterior median eye diameter. All eyes subequal in size. Procurved posterior eye row longer than recurved anterior row. Median ocular quadrangle longer than wide in front, wider in back than long. Anterior median eyes separated by slightly less than their diameter, slightly closer to anterior laterals. Posterior medians separated by up to twice their diameter, closer to posterior laterals. Anterior laterals separated by their radius from posterior laterals. Sternum longer than wide, unmodified. Chelicerae with 3–4 promarginal teeth and 7–9 retromarginal denticles. Abdomen longer than wide, tracheal spiracle much closer to epigastric furrow than to base of spinnerets. Leg formula 1423, legs unmodified. Metatarsi I and II with one pair of ventral spines. Palpus with greatly enlarged base of embolus, long curving embolus and short conductor. Ventral tibial apophysis sometimes present in addition to retrolateral tibial apophysis. Epigynum with anterior median opening and two sidepieces. Internal genitalia with long, sometimes coiling, ducts.

Variation. Only *Aysha gracilis* shows

significant variation, and that is in size and not structure or coloration. The size of both the whole animal and of the genitalia vary geographically. The largest specimens (males with cymbium length averaging 1.3 mm) occur in Virginia and surrounding states, with smaller individuals occurring in the north (New England and Michigan males with cymbium length averaging 1.1 mm) and in the south (Texas males with cymbium length averaging 0.9 mm).

KEY TO SPECIES

- | | |
|---|-------------------|
| 1a. Males | 2 |
| 1b. Females | 7 |
| 2a. Palpus without a ventral tibial apophysis (VTA) (Figs. 111, 119) | 3 |
| 2b. Palpus with a ventral tibial apophysis (VTA), sometimes small, transparent, easily overlooked (Figs. 113, 115, 117, 121) .. | 4 |
| 3a. Embolus restricted to distal half of palpal bulb (Fig. 118) | <i>arunda</i> |
| 3b. Embolus not restricted to distal half of palpal bulb (Fig. 110) | <i>velox</i> |
| 4a. VTA erect, sclerotized, relatively large (Figs. 113, 115) | 5 |
| 4b. VTA recumbent, transparent, relatively small (Figs. 117, 121) | 6 |
| 5a. Distal retrolateral tip of tegulum with a flap covering embolus (Fig. 112) .. | <i>decepta</i> |
| 5b. Distal retrolateral tip of tegulum with a sharp point underlying embolus (Fig. 114) | <i>incursa</i> |
| 6a. Base of embolus recurved, with a sharp spike (Fig. 120) | <i>cambridgei</i> |
| 6b. Base of embolus not recurved, forming a smooth arc (Fig. 116) | <i>gracilis</i> |
| 7a. Internal genitalia with simple uncoiled ducts (Figs. 124, 127, 141, 143) | 9 |
| 7b. Internal genitalia coiled or with accessory ducts (Figs. 125, 142) | 8 |
| 8a. Internal genitalia highly coiled (Fig. 125) | <i>velox</i> |
| 8b. Internal genitalia not coiled but with looping accessory ducts (Fig. 142) | <i>arunda</i> |
| 9a. Median epigynal opening near anterior rim (Figs. 123, 126, 138) | 10 |
| 9b. Median epigynal opening near middle of epigynum (Fig. 140) | <i>gracilis</i> |
| 10a. Median epigynal opening much wider than epigynal sidepieces (Fig. 138) .. | <i>cambridgei</i> |
| 10b. Median epigynal opening not wider than epigynal sidepieces (Figs. 123, 126) | 11 |
| 11a. Base of epigynal sidepieces near epigastric furrow (Fig. 126); internal genitalia with angular ducts (Fig. 127) | <i>incursa</i> |



Map 4. Distributions of *Aysha arunda*, *A. cambridgei*, *A. decepta*, *A. gracilis*, *A. incursa* and *A. velox*.

11b. Base of epigynal sidepieces far from epigastric furrow (Fig. 123); internal genitalia with rounded ducts (Fig. 124)
 ----- *decepta*

***Aysha prospera* Keyserling**
Figure 145

Aysha prospera Keyserling, 1891, *Spinnen Amerikas (Brasil. Spinn.)*, 3: 129, pl. 4, fig. 88 (♀). Female holotype from Rio Grande, Brasil, in BMNH, examined. Roewer, 1954, *Katalog der Araneae*, 2: 533. Bonnet, 1955, *Bibliographia Araneorum*, 2: 838.

This South American species, type species of *Aysha*, is a member of a large, distinct species group. Somatic characters clearly ally it with the North American forms included in the genus.

***Aysha gracilis* (Hentz)**
Map 4; Figures 116, 117, 140, 143

Clubiona gracilis Hentz, 1847, *J. Boston Soc. Natur. Hist.*, 5: 452, pl. 23, fig. 9 (♂). Type

specimens from North Carolina and Alabama in Boston Soc. Natur. Hist. (Boston Museum of Science), destroyed by beetles.

Anyphaena gracilis, L. Koch, 1836, *Arach. Fam. Drassidae*, p. 195, pl. 8, fig. 130, ♀. Comstock, 1912, *Spider Book*, p. 561, fig. 633, ♂ (not fig. 632).

Anyphaena rubra Emerton, 1890, *Trans. Connecticut Acad. Sci.*, 8: 186, pl. 6, fig. 1 (♀). Male allotype (?) from Franklin Park, Boston, Massachusetts, in MCZ, examined. Emerton, 1909, *Trans. Connecticut Acad. Sci.*, 14: 220, pl. 9, fig. 8-8c, ♂.

Aysha gracilis, Bryant, 1931, *Psyche*, 38: 119, pl. 7, fig. 13, pl. 8, fig. 26, ♂, ♀. Chickering, 1939, *Pap. Michigan Acad. Sci.*, 24: 53, figs. 9-11, ♂, ♀. Comstock, 1940, *Spider Book*, rev. ed., p. 575, fig. 633, ♂ (not fig. 632). Kaston, 1948, *Bull. Connecticut Geol. Natur. Hist. Surv.*, 70: 405, figs. 1452, 1459-1464, ♂, ♀. Roewer, 1954, *Katalog der Araneae*, 2: 534. Bonnet, 1955, *Bibliographia Araneorum*, 2: 837.

Diagnosis. *Aysha gracilis* is closest to *A. cambridgei* but lacks the sharp spike on the proximal edge of the base of embolus (Fig. 116) of that species. Females have

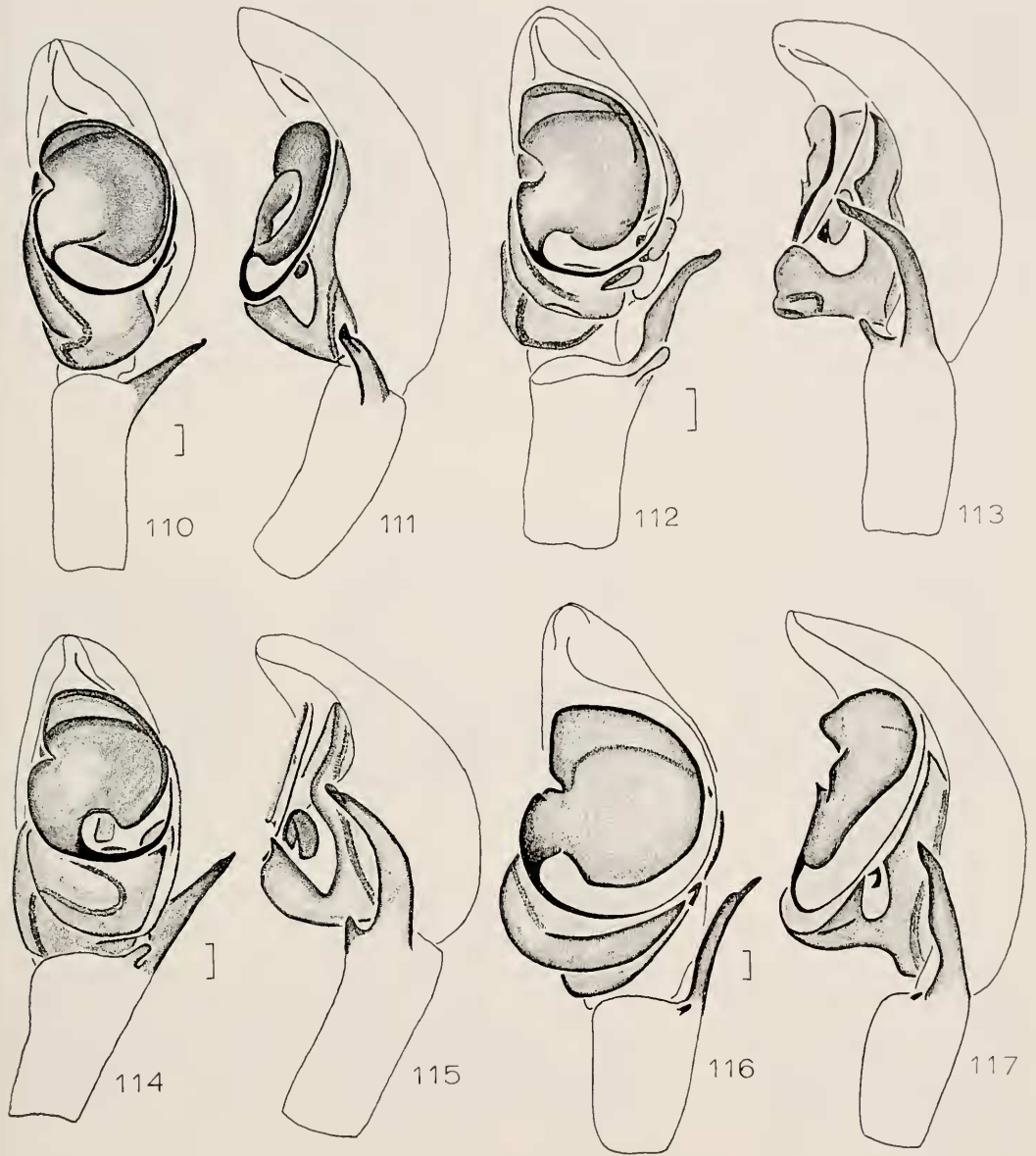


Plate 9

Figures 110, 112, 114, 116. Left palpi, ventral view. Figures 111, 113, 115, 117. Left palpi, retrolateral view. 110, 111. *Aysha velox* (Becker). 112, 113. *Aysha decepta* (Banks). 114, 115. *Aysha incursa* (Chamberlin). 116, 117. *Aysha gracilis* (Hentz).

the median epigynal opening near the middle of the epigynum (Fig. 140). Variation in this species is discussed above.

Male (Middlesex Co., Massachusetts). Total length 5.73 mm. Carapace 2.56 mm

long, 2.02 mm wide, cephalic width 1.17 mm, clypeus height 0.09 mm, light orange-brown, darkest anteriorly, with thin dark border and two dark paramedian longitudinal bands. Eyes: diameters (mm): AME

0.09, ALE 0.11, PME 0.09, PLE 0.11; anterior eye row 0.60 mm long, slightly recurved; posterior eye row 0.80 mm long, procurved; MOQ length 0.32 mm, front width 0.26 mm, back width 0.38 mm; eye interdistances (mm): AME-AME 0.09, AME-ALE 0.07, PME-PME 0.19, PME-PLE 0.15, ALE-PLE 0.06.

Sternum 1.44 mm long, 1.08 mm wide, light orange-brown with translucent border and darkened extensions to coxae. Chelicerae 1.12 mm long with 4 promarginal teeth and 8 retromarginal denticles, dark orange-brown proximally, dark brown distally. Labium and endites light orange-brown, darkest proximally. Endites sharply invaginated at middle.

Abdomen 3.20 mm long, 1.73 mm wide, pale grayish-brown with transverse rows of dark markings, venter pale. Epigastric furrow 0.40 mm from tracheal spiracle, spiracle 1.73 mm from base of spinnerets.

Legs light orange-brown with distal segments darkest. Tibial lengths (mm) and indices: I 2.64, 10; II 1.87, 15; III 1.19, 26; IV 2.09, 15. Ventral spination: tibiae I, II 2-2-2, III 1-2-2; IV 2-2-2; metatarsi I, II 2-0-0, III 2-1-2, IV 2-2-2.

Palpus as in Figure 116, 117.

Female (Washington Co., Arkansas). Coloration as in male.

Total length 8.42 mm. Carapace 2.75 mm long, 2.11 mm wide, cephalic width 1.47 mm, clypeus height 0.10 mm. Eyes: diameters (mm): AME 0.14, ALE 0.14, PME 0.13, PLE 0.14; anterior eye row 0.43 mm long, recurved; posterior eye row 1.04 mm long, procurved; MOQ length 0.43 mm, front width 0.36 mm, back width 0.49 mm; eye interdistances (mm): AME-AME 0.09, AME-ALE 0.08, PME-PME 0.22, PME-PLE 0.18, ALE-PLE 0.06.

Sternum 1.84 mm long, 1.31 mm wide. Chelicerae 1.57 mm long with teeth as in male.

Abdomen 5.76 mm long, 3.53 mm wide. Epigastric furrow 0.68 mm from tracheal spiracle, spiracle 3.24 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 2.56, 16; II 1.94, 20; III 1.26, 30; IV 2.30, 17. Ventral spination: tibiae I 2-2-0, II 1-2-1, III 1-1-2, IV 1-2-2; metatarsi I, II 2-0-0, III 2-0-2, IV 2-2-2.

Epigynum as in Figure 140, internal genitalia as in Figure 143.

Natural history. Mature males and females have been taken year-round. Specimens have been taken by sweeping, in pitcher plants, on loblolly pine, in fall webworm nests and frequently in houses.

Distribution. New England west to Wisconsin and Iowa, south to Florida and eastern Texas (Map 4).

Aysha cambridgei Bryant

Map 4; Figures 120, 121, 138, 141

Aysha cambridgei Bryant, 1931, *Psyche*, 38: 119, pl. 7, fig. 15 (♂). Male holotype from Guanajuato, Mexico, in MCZ, examined. Roewer, 1954, *Katalog der Araneae*, 2: 532. Bonnet, 1955, *Bibliographia Araneorum*, 2: 836.

Diagnosis. *Aysha cambridgei* is closely related to *A. gracilis* but has a distinctive spike on the proximal edge of the base of the embolus (Fig. 120) and the median epigynal opening near the anterior rim of the epigynum (Fig. 138).

Male (Jeff Davis Co., Texas). Coloration as in *Aysha gracilis* except that the abdomen is pale white with two dark paramedian longitudinal bands.

Total length 5.87 mm. Carapace 2.41 mm long, 1.91 mm wide, cephalic width 0.97 mm, clypeus height 0.11 mm. Eyes: diameters (mm): AME 0.11, ALE 0.12, PME 0.11, PLE 0.11; anterior eye row 0.57 mm long, recurved; posterior eye row 0.75 mm long, procurved; MOQ length 0.33 mm, front width 0.28 mm, back width 0.38 mm; eye interdistances (mm): AME-AME 0.06, AME-ALE 0.05, PME-PME 0.16, PME-PLE 0.11, ALE-PLE 0.05.

Sternum 1.42 mm long, 1.01 mm wide. Chelicerae 0.98 mm long with 4 promarginal teeth and 7 retromarginal denticles.

Abdomen 3.49 mm long, 1.58 mm wide. Epigastric furrow 0.68 mm from tracheal

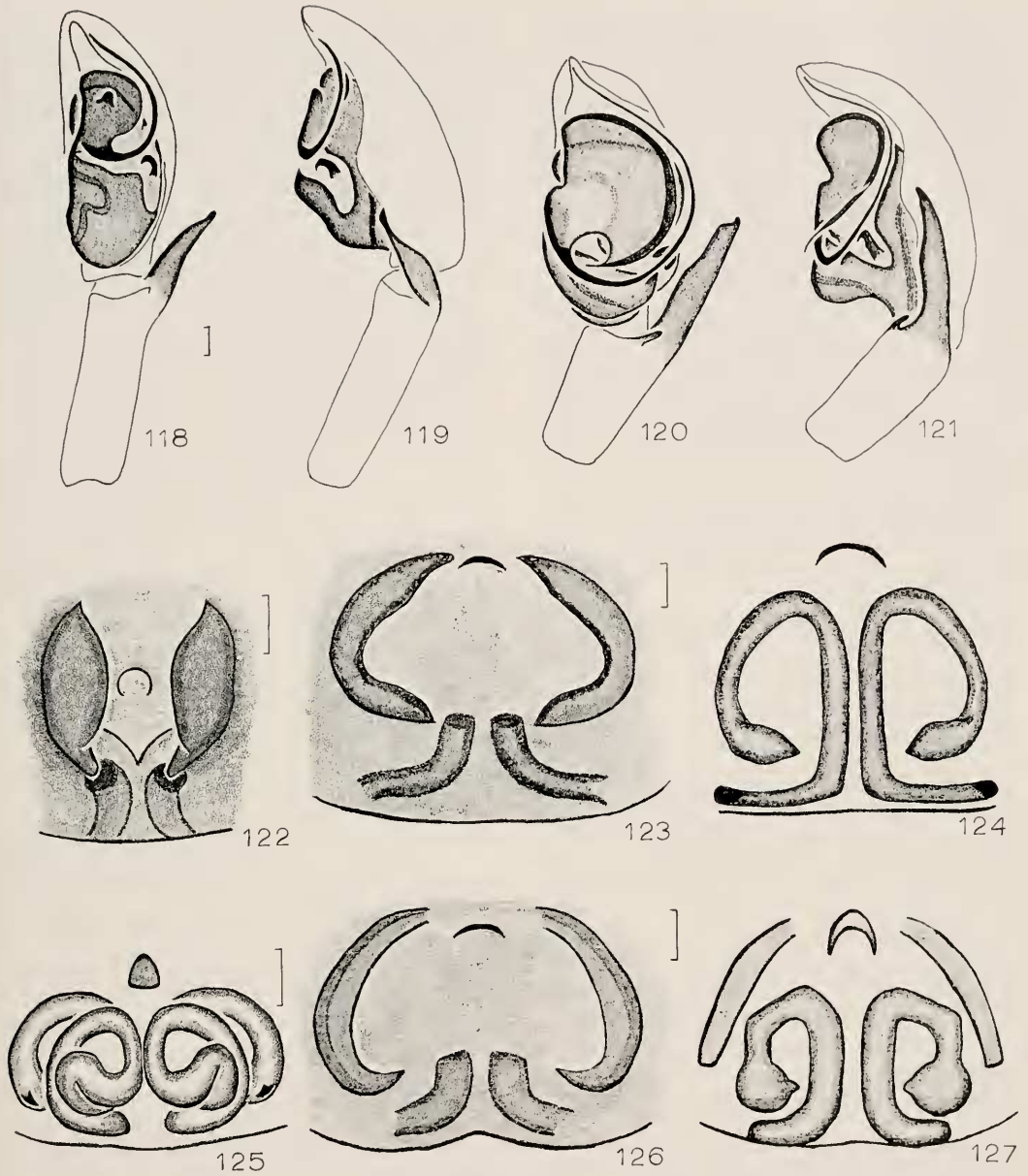


Plate 10

Figures 118, 120. Left palpi, ventral view. Figures 119, 121. Left palpi, retrolateral view. Figures 122, 123, 126. Epigyna, ventral view. Figures 124, 125, 127. Internal genitalia, dorsal view. 118, 119. *Aysha arunda* new species. 120, 121. *Aysha cambridgei* Bryant. 122, 125. *Aysha velox* (Becker). 123, 124. *Aysha decepta* (Banks). 126, 127. *Aysha incursa* (Chamberlin).

spiracle, spiracle 1.55 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 3.06, 8; II 1.87, 13; III 1.28, 21; IV 2.16, 12.

Ventral spination: tibiae I, II 2-2-2, III 1-2-2, IV 2-2-2; metatarsi I, II 2-0-0, III, IV 2-2-2.

Palpus as in Figures 120, 121.

Female (Henderson Co., Texas). Coloration as in male.

Total length 8.50 mm. Carapace 3.35 mm long, 2.52 mm wide, cephalic width 1.69 mm, clypeus height 0.12 mm. Eyes: diameters (mm): AME 0.14, ALE 0.16, PME 0.14, PLE 0.14; anterior eye row 0.84 mm long, recurved; posterior eye row 1.11 mm long, procurved; MOQ length 0.42 mm, front width 0.37 mm, back width 0.50 mm; eye interdistances (mm): AME-AME 0.10, AME-ALE 0.07, PME-PME 0.22, PME-PLE 0.20, ALE-PLE 0.05.

Sternum 1.91 mm long, 1.22 mm wide. Chelicerae 1.69 mm long with teeth as in male.

Abdomen 5.04 mm long, 2.88 mm wide. Epigastric furrow 0.61 mm from tracheal spiracle, spiracle 3.17 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 2.88, 12; II 2.07, 17; III 1.40, 26; IV 2.57, 15. Ventral spination as in male except tibiae I, II 2-2-0 and III 2-2-2.

Epigynum as in Figure 138, internal genitalia as in Figure 141.

Natural history. Mature males have been taken from mid-June through early August, mature females from late May through early August. Specimens have been taken on trees and shrubs.

Distribution. South central states from Alabama to western Texas, south to central Mexico (Map 4).

Aysha decepta (Banks)

Map 4; Figures 112, 113, 123, 124

Auyphaena decepta Banks, 1899, Proc. Ent. Soc. Washington, 4: 190. Female holotype from Brazos Co., Texas, in MCZ, examined.

Aysha minuta F. O. P.-Cambridge, 1900, Biologia Centrali Americana, Aran., 2: 99, pl. 7, figs. 18-19 (♂, ♀). Male holotype, female allotype from Guatemala, in BMNH, examined. Bryant, 1931, Psyche, 38: 120, pl. 7, fig. 17, ♂. Roewer, 1954, Katalog der Araneae, 2: 533. Bonnet, 1955, Bibliographia Araneorum, 2: 838. NEW SYNONYMY.

Aysha decepta, Bryant, 1931, Psyche, 38: 120, pl. 7, fig. 16, pl. 8, fig. 27, ♂, ♀. Roewer, 1954,

Katalog der Araneae, 2: 534. Bonnet, 1955, Bibliographia Araneorum, 2: 836.

Diagnosis. *Aysha decepta* is very closely related to *A. incursa* but has a characteristic flap (on the retrolateral tip of the tegulum) that covers the embolus (Fig. 112), while the base of the epigynal sidepieces is a considerable distance from the epigastric furrow (Fig. 123). Both morphological and zoogeographical data (Map 4) indicate that these two species are each other's nearest relatives.

Male (Hidalgo Co., Texas). Coloration as in *Aysha cambridgei*.

Total length 4.82 mm. Carapace 2.25 mm long, 1.76 mm wide, cephalic width 1.06 mm, clypeus height 0.10 mm. Eyes: diameters (mm): AME 0.08, ALE 0.10, PME 0.11, PLE 0.11; anterior eye row 0.58 mm long, straight; posterior eye row 0.75 mm long, procurved; MOQ length 0.23 mm, front width 0.24 mm, back width 0.39 mm; eye interdistances (mm): AME-AME 0.08, AME-ALE 0.06, PME-PME 0.18, PME-PLE 0.12, ALE-PLE 0.05.

Sternum 1.37 mm long, 0.85 mm wide. Chelicerae 0.97 mm long with 4 promarginal teeth and 7 retromarginal denticles.

Abdomen 2.74 mm long, 1.39 mm wide. Epigastric furrow 0.38 mm from tracheal spiracle, spiracle 1.28 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 2.54, 9; II 1.67, 14; III 1.01, 25; IV 1.89, 16. Ventral spination: tibiae I 2-2-0, II 1-2-0, III 1-2-2, IV 2-2-2; metatarsi I, II 2-0-0, III, IV 2-2-2.

Palpus as in Figures 112, 113.

Female (E. Baton Rouge Parish, Louisiana). Coloration as in male of *Aysha cambridgei*.

Total length 5.76 mm. Carapace 2.45 mm long, 1.80 mm wide, cephalic width 1.17 mm, clypeus height 0.09 mm. Eyes: diameters (mm): AME 0.10, ALE 0.13, PME 0.12, PLE 0.12; anterior eye row 0.60 mm long, recurved; posterior eye row 0.76 mm long, procurved; MOQ length 0.30 mm, front width 0.26 mm, back width

0.38 mm; eye interdistances (mm): AME-AME 0.07, AME-ALE 0.05, PME-PME 0.15, PME-PLE 0.11, ALE-PLE 0.04.

Sternum 1.35 mm long, 0.95 mm wide. Chelicerae 0.89 mm long with 4 promarginal teeth and 8 retromarginal denticles.

Abdomen 3.51 mm long, 2.20 mm wide. Epigastric furrow 0.41 mm from tracheal spiracle, spiracle 1.78 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 1.84, 14; II 1.40, 19; III 0.93, 29; IV 1.82, 17. Ventral spination as in male except tibiae III 1-1-2 and metatarsi III 2-1-2.

Epigynum as in Figure 123, internal genitalia as in Figure 124.

Natural history. Mature males and females have been taken every month except January and February. Specimens are commonly found in great quantities in wasp nests and occasionally in houses.

Distribution. Northern Florida west to eastern Texas, south to Costa Rica (Map 4).

Aysha incursa (Chamberlin)

Map 4; Figures 114, 115, 126, 127

Anyphaena incursa Chamberlin, 1919, Pomona Coll. J. Ent. Zool., 12: 12, pl. 5, fig. 2 (♀). Female holotype from Claremont, California, in MCZ, examined. Bryant, 1931, Psyche, 38: 120 (sub *Aysha decepta* [sic]). Roewer, 1954, Katalog der Araneae, 2: 534 (sub *Aysha decepta* [sic]). Bonnet, 1955, Bibliographia Araneorum, 2: 836 (sub *Aysha decepta* [sic]).
Anyphaena johnstoni Chamberlin, 1924, Proc. California Acad. Sci., 12: 662, figs. 105, 106 (♂, ♀). Female holotype, male allotype from San Pedro Nolasco Island, Gulf of California, in California Academy of Sciences. Paratype male from San Marcos Island, Gulf of California, in MCZ, examined. Bryant, 1931, Psyche, 38: 120 (sub *Aysha decepta* [sic]). Bonnet, 1955, Bibliographia Araneorum, 2: 836 (sub *Aysha decepta* [sic]).

Anyphaena nigrifrons Chamberlin and Woodbury, 1929, Proc. Biol. Soc. Washington, 42: 137, pl. 1, fig. 4 (♀). Female holotype from St. George, Utah, in AMNH, examined. NEW SYNONYMY.

Aysha nigrifrons, Bryant, 1931, Psyche, 38: 121. Roewer, 1954, Katalog der Araneae, 2: 534. Bonnet, 1955, Bibliographia Araneorum, 2: 838.

Diagnosis. *Aysha incursa* is very closely related to *A. decepta* but has a distinctive sharp point on the retrolateral tip of the tegulum (Fig. 114), while the base of the epigynal sidepieces is near the epigastric furrow (Fig. 126).

Male (Tulare Co., California). Coloration as in *Aysha cambridgei*.

Total length 6.08 mm. Carapace 3.02 mm long, 2.18 mm wide, cephalic width 1.22 mm, clypeus height 0.12 mm. Eyes: diameters (mm): AME 0.11, ALE 0.12, PME 0.11, PLE 0.12; anterior eye row 0.66 mm long, recurved; posterior eye row 0.84 mm long, procurved; MOQ length 0.33 mm, front width 0.31 mm, back width 0.42 mm; eye interdistances (mm): AME-AME 0.10, AME-ALE 0.07, PME-PME 0.21, PME-PLE 0.17, ALE-PLE 0.05.

Sternum 1.67 mm long, 1.08 mm wide. Chelicerae 1.22 mm long with 3 promarginal teeth and 8 retromarginal denticles.

Abdomen 3.38 mm long, 1.80 mm wide. Epigastric furrow 0.50 mm from tracheal spiracle, spiracle 1.75 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 3.15, 9; II 2.16, 14; III 1.40, 26; IV 2.34, 16. Ventral spination: tibiae I 2-2-0, II, III, IV 2-2-2; metatarsi I, II 2-0-0, III, IV 2-2-2.

Palpus as in Figures 114, 115.

Female (Santa Barbara Co., California). Coloration as in male of *Aysha cambridgei*.

Total length 5.72 mm. Carapace 2.09 mm long, 1.66 mm wide; cephalic width 1.04 mm, clypeus height 0.05 mm. Eyes: diameters (mm): AME 0.08, ALE 0.09, PME 0.10, PLE 0.10; anterior eye row 0.50 mm long, recurved; posterior eye row 0.67 mm long, procurved; MOQ length 0.25 mm, front width 0.23 mm, back width 0.33 mm; eye interdistances (mm): AME-AME 0.07, AME-ALE 0.05, PME-PME 0.14, PME-PLE 0.11, ALE-PLE 0.06.

Sternum 1.30 mm long, 0.85 mm wide. Chelicerae 0.70 mm long with 3 promarginal teeth and 8 retromarginal denticles.

Abdomen 4.00 mm long, 2.38 mm wide. Epigastric furrow 0.70 mm from tracheal spiracle, spiracle 1.91 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 1.57, 14; II 1.26, 17; III 0.86, 29; IV 1.64, 15. Ventral spination as in male except tibiae II, III 1-1-0 and IV 1-1-2 and metatarsi III 2-0-2.

Epigynum as in Figure 126, internal genitalia as in Figure 127.

Natural history. Mature males have been taken from late April through early September, mature females year-round. Specimens have been taken on poplars, in fields, and in houses.

Distribution. California west to Utah, south to southern Mexico (Map 4).

Aysha velox (Becker)

Map 4; Figures 110, 111, 122, 125

Anyphaena velox Becker, 1879, Ann. Ent. Soc. Belgique, 22: 83, pl. 2, figs. 5-7 (♀). Female holotype from Pascagoula, Mississippi, should be in the Institute Royal des Sciences Naturelles de Belgique but could not be located there by Mr. J. Kekenbosch in 1971; lost, presumed destroyed. Banks, 1904, Proc. Acad. Nat. Sci. Philadelphia, 56: 123, pl. 8, fig. 19, ♂.

Anyphaena floridana Banks, 1896, Trans. Amer. Ent. Soc., 23: 63. Female holotype from Lake Worth, Florida, in MCZ, examined.

Aysha orlandensis Tullgren, 1901, Bih. Svenska Akad., 27: 19, fig. 4 (♀). Female holotype from Orlando, Florida, in Uppsala Univ. Zool. Mus., examined. Bryant, 1931, Psyche, 38: 119 (sub *Aysha gracilis* [sic]). Roewer, 1954, Katalog der Araneae, 2: 534 (sub *Aysha gracilis* [sic]). Bonnet, 1955, Bibliographia Araneorum, 2: 837 (sub *Aysha gracilis* [sic]). NEW SYNONYMY.

Aysha velox, Banks, 1909, Estacion central agronomica de Cuba, Second Report, p. 158. Bryant, 1931, Psyche, 38: 119, pl. 7, fig. 14, pl. 8, fig. 34, ♂, ♀. Roewer, 1954 Katalog der Araneae 2: 534. Bonnet, 1955, Bibliographia Araneorum, 2: 839.

Chiracanthium falcum Chamberlin, 1925, Bull. Mus. Comp. Zool., 67: 220. Male holotype from Sebastian, Florida, in MCZ, examined.

Diagnosis. *Aysha velox* is a distinctive species easily recognized by its short retro-

lateral tibial apophysis and its lack of a ventral tibial apophysis (Fig. 111) and the embolus' not being restricted to the distal half of the palpal bulb (Fig. 110). The coiled internal ducts of females (Fig. 125) are diagnostic.

Male (Alachua Co., Florida). Coloration as in *Aysha gracilis* except that the abdomen lacks dark markings.

Total length 7.31 mm. Carapace 3.45 mm long, 2.52 mm wide, cephalic width 1.51 mm, clypeus height 0.13 mm. Eyes: diameters (mm): AME 0.15, ALE 0.14, PME 0.13, PLE 0.15; anterior eye row 0.80 mm long, recurved; posterior eye row 1.01 mm long, procurved; MOQ length 0.42 mm, front width 0.38 mm, back width 0.47 mm; eye interdistances (mm): AME-AME 0.09, AME-ALE 0.09, PME-PME 0.22, PME-PLE 0.18, ALE-PLE 0.05.

Sternum 1.92 mm long, 1.28 mm wide. Chelicerae 1.58 mm long with 4 promarginal teeth and 8 retromarginal denticles.

Abdomen 4.14 mm long, 1.76 mm wide. Epigastric furrow 0.31 mm from tracheal spiracle, spiracle 2.46 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 3.92, 8; II 2.86, 12; III 1.69, 21; IV 2.52, 14. Ventral spination: tibiae I-IV 2-2-2; metatarsi I, II 2-0-0, III, IV 2-2-2.

Palpus as in Figure 110, 111.

Female (Alachua Co., Florida). Coloration as in male.

Total length 8.42 mm. Carapace 3.96 mm long, 2.88 mm wide; cephalic width 1.87 mm, clypeus height 0.14 mm. Eyes: diameters (mm): AME 0.15, ALE 0.14, PME 0.14, PLE 0.14; anterior eye row 1.02 mm long, recurved; posterior eye row 1.31 mm long, procurved; MOQ length 0.48 mm, front width 0.45 mm, back width 0.57 mm; eye interdistances (mm): AME-AME 0.14, AME-ALE 0.14, PME-PME 0.28, PME-PLE 0.27, ALE-PLE 0.09.

Sternum 2.16 mm long, 1.62 mm wide. Chelicerae 1.87 mm long with teeth as in male.

Abdomen 4.50 mm long, 2.41 mm wide.

Epigastric furrow 0.36 mm from tracheal spiracle, spiracle 2.48 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 3.46, 11; II 2.68, 14; III 1.66, 24; IV 2.79, 14. Ventral spination as in male.

Epigynum as in Figure 122, internal genitalia as in Figure 125.

Natural history. Mature males and females have been taken year-round. Specimens have been taken on *Casuarina* sp., *Citrus* sp., *Paurotis* sp., *Calamandra* sp., *Pinus* sp., *Nelumbo* sp., and in houses.

Distribution. North Carolina west to Arkansas, south to east Texas and Florida, Cuba, Haiti, the Dominican Republic and Bermuda (Map 4).

Aysha arunda new species

Map 4; Figures 118, 119, 139, 142

Types. Male holotype, female paratype from Edinburg, Hidalgo Co., Texas, May 1934 (Mulaik), deposited in AMNH. Male and female paratypes from Hidalgo Co., Texas, deposited in MCZ. The specific name is an arbitrary combination of letters.

Diagnosis. *Aysha arunda* is a distinctive species easily recognized by the restriction of the embolus to the distal half of the palpal bulb (Fig. 118) and the triangular shape of the epigynum (Fig. 139).

Male (Hidalgo Co., Texas). Coloration as in *Aysha cambridgei*.

Total length 6.23 mm. Carapace 3.04 mm long, 2.02 mm wide, cephalic width 1.49 mm, clypeus height 0.10 mm. Eyes: diameters (mm): AME 0.13, ALE 0.13, PME 0.14, PLE 0.14; anterior eye row 0.74 mm long, recurved; posterior eye row 0.95 mm long, procurved; MOQ length 0.44 mm, front width 0.34 mm, back width 0.43 mm; eye interdistances (mm): AME-AME 0.07, AME-ALE 0.06, PME-PME 0.16, PME-PLE 0.19, ALE-PLE 0.07.

Sternum 1.73 mm long, 1.24 mm wide. Chelicerae 1.62 mm long with 4 promarginal teeth and 8 retromarginal denticles.

Abdomen 3.62 mm long, 1.67 mm wide.

Epigastric furrow 0.31 mm from tracheal spiracle, spiracle 1.75 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 4.03, 7; II 2.72, 12; III 1.53, 20; IV 2.58, 15. Ventral spination: tibiae I-IV 2-2-2; metatarsi I, II 2-0-0, III, IV 2-2-2.

Palpus as in Figures 118, 119.

Female (Hidalgo Co., Texas). Coloration as in male of *Aysha cambridgei*.

Total length 6.59 mm. Carapace 2.99 mm long, 2.23 mm wide, cephalic width 1.33 mm, clypeus height 0.09 mm. Eyes: diameters (mm): AME 0.11, ALE 0.13, PME 0.13, PLE 0.13; anterior eye row 0.70 mm long, recurved; posterior eye row 0.91 mm long, procurved; MOQ length 0.40 mm, front width 0.32 mm, back width 0.43 mm; eye interdistances (mm): AME-AME 0.10, AME-ALE 0.07, PME-PME 0.18, PME-PLE 0.17, ALE-PLE 0.06.

Sternum 1.62 mm long, 1.13 mm wide. Chelicerae 1.37 mm long with 4 promarginal teeth and 9 retromarginal denticles.

Abdomen 3.76 mm long, 2.12 mm wide. Epigastric furrow 0.40 mm from tracheal spiracle, spiracle 2.23 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 2.65, 12; II 2.00, 16; III 1.22, 27; IV 2.25, 16. Ventral spination as in male.

Epigynum as in Figure 139, internal genitalia as in Figure 142.

Natural history. Mature males have been taken from early May through late September, mature females from early April through late September. Nothing is known of the habits of this species.

Distribution. Southern Texas (Map 4).

Oxysoma Nicolet

Oxysoma Nicolet, 1849, in Gay: Hist. Chili, 10 (3): 511. Type species *Oxysoma punctatum* Nicolet, 1849, designated by Simon, 1897, Hist. Natur. Araign., 2: 100.

Gayemina Certsch, 1935, Amer. Mus. Novitates, No. 805: 21. Type species by monotypy *Gayemina britcheri* Certsch, 1935.

Diagnosis. *Oxysoma* can be quickly distinguished from all other North Ameri-

can anyphaenids by the presence of only two teeth on the cheliceral retromargin. In addition, the coloration pattern shown in Figure 109 is typical for the genus throughout its range. Predominantly South American, only one species occurs north of Mexico. *Oxysoma* is more closely related to *Aysha* than to *Anyphaena* or *Wulfila*.

Description. Total length 5–7 mm. Carapace longer than wide, narrowed in front to about half its maximum width. Clypeus height more than twice the anterior median eye diameter. Posterior median, posterior lateral and anterior lateral eyes subequal in size, much larger than anterior medians. Procurved posterior eye row longer than recurved anterior row. Median ocular quadrangle more than twice as wide in back as in front. Anterior median eyes separated by their diameter, closer to anterior laterals than to each other. Posterior medians separated by almost three times their diameter, closer to posterior laterals. Anterior laterals separated by their diameter from posterior laterals. Sternum longer than wide, unmodified. Chelicerae with 3 promarginal and 2 retromarginal teeth. Abdomen longer than wide, tracheal spiracle roughly midway between epigastric furrow and base of spinnerets. Leg formula 1423, legs unmodified. Metatarsi I and II with one pair of ventral spines. Palpus bulbous, with elongated conductor and conspicuous embolus. Retrolateral tibial apophysis lacking. Epigynum on a sclerotized plate. Internal genitalia with two large spermathecae and accessory ducts.

Variation. The two males of *Oxysoma cubana* known from Arizona are slightly larger than the eastern specimens. One has a broken conductor, the other matches the eastern specimens in genitalic details.

Oxysoma punctatum Nicolet

Oxysoma punctatum Nicolet, 1849, in Gay: Hist. Chili, 10(3): 513, pl. 4, fig. 13 (♀). Female holotype from Chile, possibly in Muséum National d'Histoire Naturelle, Paris, unavailable.

Roewer, 1954, Katalog der Araneae, 2: 544.
Bonnet, 1958, Bibliographia Araneorum, 2: 3269.

Types of this species, type species of *Oxysoma*, were unfortunately unavailable for examination.

Oxysoma cubana Banks Map 5; Figures 105–109

Oxysoma cubana Banks, 1909, Estacion central agronomica de Cuba, Second Report, II (2): 157, pl. 10, fig. 7 (♂). Male holotype from Havana, Habana, Cuba, in MCZ, examined. Bryant, 1940, Bull. Mus. Comp. Zool., 86: 435, pl. 16, figs. 218, 222, pl. 17, fig. 234, ♂, ♀. Kaston, 1948, Bull. Connecticut Geol. Natur. Hist. Surv., 70: 405.

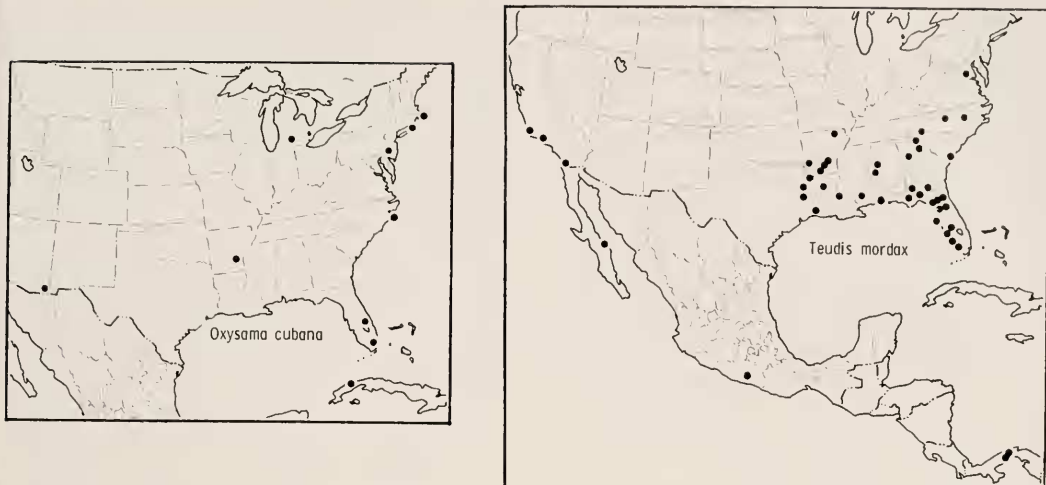
Gayennina britcheri Gertsch, 1935, Amer. Mus. Novitates, No. 805: 21, figs. 35, 36 (♀). Female holotype from Woods Hole, Massachusetts, in AMNH, examined. Kaston, 1948, Bull. Connecticut Geol. Natur. Hist. Surv., 70: 405. Roewer, 1954, Katalog der Araneae, 2: 540. Bonnet, 1957, Bibliographia Araneorum, 2: 1981.

Oxysoma cubanum, Roewer, 1954, Katalog der Araneae, 2: 543. Bonnet, 1958, Bibliographia Araneorum, 2: 3268.

Diagnosis. The characters of the genus distinguish this species from all other nearctic anyphaenids. The bulbous palp (Fig. 107) and characteristic epigynum (Fig. 106), as well as the color pattern (Fig. 109), are diagnostic. Variation in this species is discussed above.

Male (Suffolk Co., New York). Total length 5.22 mm. Carapace 2.68 mm long, 2.14 mm wide, cephalic width 1.08 mm, clypeus height 0.23 mm, pale yellow with a median dark band and two submarginal longitudinal rows of dark spots. Eyes: diameters (mm): AME 0.05, ALE 0.11, PME 0.09, PLE 0.08; anterior eye row 0.49 mm long, slightly recurved; posterior eye row 0.76 mm long, procurved; MOQ length 0.26 mm, front width 0.19 mm, back width 0.44 mm; eye interdistances (mm): AME–AME 0.06, AME–ALE 0.05, PME–PME 0.26, PME–PLE 0.16, ALE–PLE 0.12.

Sternum 1.42 mm long, 0.95 mm wide, pale yellow with translucent border. Chelicerae 0.65 mm long, pale yellow with 3



Map 5. Distributions of *Oxsoma cubana* and *Teudis mordax*.

promarginal and 2 retromarginal teeth. Labium and endites pale yellow. Endites not invaginated at middle.

Abdomen 2.97 mm long, 1.39 mm wide, pale white with a median longitudinal dark band, venter pale. Epigastric furrow 0.58 mm from tracheal spiracle, spiracle 1.13 mm from base of spinnerets.

Legs pale yellow with scattered dark markings, unmodified. Tibial lengths (mm) and indices: I 2.09, 17; II 1.78, 20; III 1.35, 26; IV 2.07, 14. Ventral spination: tibiae I, II 2-2-2, III 1-2-2, IV 2-2-2; metatarsi I, II 2-0-0, III 2-0-2, IV 2-2-2.

Palpus as in Figures 105, 107.

Female (Barnstable Co., Massachusetts). Coloration as in male.

Total length 5.90 mm. Carapace 2.66 mm long, 1.91 mm wide, cephalic width 1.01 mm, clypeus height 0.14 mm. Eyes: diameters (mm): AME 0.06, ALE 0.12, PME 0.09, PLE 0.10; anterior eye row 0.46 mm long, recurved; posterior eye row 0.74 mm long, procurved; MOQ length 0.34 mm, front width 0.19 mm, back width 0.41 mm; eye interdistances (mm): AME-AME 0.05, AME-ALE 0.04, PME-PME 0.25, PME-PLE 0.13, ALE-PLE 0.11.

Sternum 1.42 mm long, 0.86 mm wide.

Chelicerae 0.86 mm long with teeth as in male.

Abdomen 3.71 mm long, 1.71 mm wide. Epigastric furrow 1.19 mm from tracheal spiracle, spiracle 1.13 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 1.55, 23; II 1.46, 23; III 1.10, 21; IV 1.42, 18. Ventral spination as in male except tibiae III 0-2-2 and metatarsi IV 0-0-0.

Epigynum as in Figure 106, internal genitalia as in Figure 108.

Natural history. Mature males have been taken from late May through late August, mature females from late March through late August. One specimen was taken in a pitfall trap, but the habits of this widespread but rare species are unknown.

Distribution. Southeastern Arizona to Michigan, Massachusetts, Florida, and Cuba (Map 5).

Teudis O. P.-Cambridge

Teudis O. P.-Cambridge, 1896, *Biologia Centrali Americana*, Aran., 1: 198. Type species *Teudis gentilis* O. P.-Cambridge, 1896 (= *Teudis geminus* Petrunkevitch, 1911), designated by F.O. P.-Cambridge, 1900, *ibid.*, 2: 100.

Diagnosis. The limits of this genus are not known with certainty. One of the

species here placed in *Teudis* was included in the genus by its original author, O. P.-Cambridge. As here construed, the genus is a large one, including a large number of neotropical species with diverse genitalia. The following somatic characters are diagnostic: the carapace is only slightly narrowed in front, is reddish brown, darkest at the sides, with a shiny, glabrous cephalic area and without dark paramedian longitudinal bands; the legs are short and thick; the chelicerae are often produced forward. The affinities of the genus are uncertain, but it is probably more closely related to *Aysha* and *Oxysoma* than to *Anypphaena* or *Wulfila*.

Description. Total length 3–5 mm. Carapace longer than wide, narrowed in front to two-thirds to four-fifths of its maximum width. Clypeus height roughly equal to anterior median eye diameter. Posterior median, posterior lateral and anterior lateral eyes subequal in size, slightly larger than anterior medians. Procurved posterior eye row longer than recurved anterior row. Median ocular quadrangle longer than wide in front, wider in back than long. Anterior median eyes separated by their diameter, closer to anterior laterals than to each other. Posterior medians separated by 1.5 times their diameter, closer to posterior laterals. Anterior laterals separated by their radius from posterior laterals. Sternum longer than wide, unmodified. Chelicerae often produced forward, with 3–4 promarginal teeth and 4–6 retromarginal denticles. Abdomen longer than wide, tracheal spiracle slightly closer to epigastric furrow than to base of spinnerets. Leg formula 1423, legs unmodified. Metatarsi I and II with one or two pairs of ventral spines. Palpus with a sharply pointed median apophysis, short conductor and conspicuous curving embolus. Retrolateral tibial apophysis spur-like, retrolateral patellar apophysis sometimes present. Epigynum with conspicuous openings; two simple spermathecae.

Variation. *Teudis mordax* is a polymor-

phic species. Two forms of males occur, one in which the chelicerae are similar to those of females, averaging 1.0 mm in length and one in which the chelicerae are greatly elongated, averaging 2.3 mm in length. This polymorphism occurs in both areas from which adequate population samples exist, the southeastern United States and Panama. The proportion of males with long chelicerae is about one in five. The genitalia are identical in both forms. The paratype male of *Gayenna absoluta* from Baja California, a synonym, has normal chelicerae; the holotype male of *Teudis mordax* from Guerrero, Mexico, has elongate chelicerae. The California population is unfortunately known only from females, which are slightly larger than those from other parts of the range. The special uses, if any, of the long chelicerae are unknown.

KEY TO SPECIES

- 1a. Metatarsi I and II with two pairs of ventral spines. Chelicerae produced forward. Leg segments uniform in color. Palpus without a retrolateral patellar apophysis (Fig. 131). Epigynum as in Fig. 132 *mordax*
- 1b. Metatarsi I and II with one pair of ventral spines. Chelicerae not produced forward. Femora much darker than other leg segments. Palpus with a retrolateral patellar apophysis (Fig. 128). Epigynum as in Fig. 129 *calcar*

Teudis gentilis O. P.-Cambridge Figure 146

Teudis gentilis O. P.-Cambridge, 1896, *Biologia Centrali Americana*, Aran., 1: 199, pl. 25, fig. 6 (♂). Male holotype from Coban, Guatemala, in BMNH, examined.

Teudis geminus Petrunkevitch, 1911, *Bull. Amer. Mus. Natur. Hist.*, 29: 516, *nom. nov.* for *T. gentilis*, possibly preoccupied by *Anypphaena gentilis* Keyserling, 1891. Roewer, 1954, *Katalog der Araneae*, 2: 548. Bonnet, 1959, *Bibliographia Araneorum*, 2: 4366.

This species, type species of *Teudis*, is genitally close to several species from Panama described by Chickering in the genus *Sillus* and is somatically similar to the species here included in *Teudis*.

Teudis mordax (O. P.-Cambridge)

Map 5; Figures 131-133

Delozeugma mordax O. P.-Cambridge, 1896, *Biologia Centrali Americana, Aran.*, 1: 182, pl. 22, fig. 11 (♂). Male holotype from Omiltemi, Guerrero, Mexico, in BMNH, examined.

Teudis mordax, O. P.-Cambridge, 1896, *Biologia Centrali Americana, Aran.*, 1: 198. Roewer, 1954, *Katalog der Araneae*, 2: 549. Bonnet, 1959, *Bibliographia Araneorum*, 2: 4368.

Anyphaena fragilis Banks, 1897, *Canad. Ent.*, 29: 194. Female holotype from Jacksonville, Florida, in MCZ, examined. Bryant, 1931, *Psyche*, 38: 114, pl. 8, fig. 32, ♀. Roewer, 1954, *Katalog der Araneae*, 2: 527. Bonnet, 1955, *Bibliographia Araneorum*, 2: 344. NEW SYNONYMY.

Gayenna parvula Banks, 1899, *Proc. Ent. Soc. Washington*, 4: 191. Female holotype from Shreveport, Louisiana, in MCZ, examined.

Gayenna absoluta Chamberlin, 1924, *Proc. California Acad. Sci.*, 12: 661, figs. 103, 104 (♂, ♀). Female holotype, male allotype from Concepcion Bay, Baja California, in California Academy of Sciences. Male and female paratypes from same locality in MCZ, examined. Roewer, 1954, *Katalog der Araneae*, 2: 535. Bonnet, 1957, *Bibliographia Araneorum*, 2: 1976. NEW SYNONYMY.

Anyphaena laticeps Bryant, 1931, *Psyche*, 38: 108, pl. 6, fig. 4, pl. 8, fig. 24 (♂, ♀). Male holotype, female allotype from Thompson's Mills, Jackson Co., Georgia, in MCZ, examined. Roewer, 1954, *Katalog der Araneae*, 2: 529. Bonnet, 1955, *Bibliographia Araneorum*, 2: 345. NEW SYNONYMY.

Sillus coloratus Chickering, 1937, *Pap. Michigan Acad. Sci.*, 22: 548, pl. 58, fig. 10, pl. 59, figs. 23, 32 (♀). Female holotype from Barro Colorado Island, Panama Canal Zone, in MCZ, examined. Roewer, 1954, *Katalog der Araneae*, 2: 545. Bonnet, 1958, *Bibliographia Araneorum*, 2: 4048. NEW SYNONYMY.

Anyphaena barrowsi Chamberlin and Ivie, 1946, *Bull. Univ. Utah*, 36: 9, fig. 12 (♀). Female holotype from Fort Myers, Florida, in AMNH, examined. Roewer, 1954, *Katalog der Araneae*, 2: 524. NEW SYNONYMY.

Teudis fragilis, Barnes, 1953, *Amer. Mus. Novitates*, No. 1632: 18.

Diagnosis. *Teudis mordax* may be distinguished from all other anyphaenids in America north of Mexico by the chelicerae, which project forward. The shape of the palpal median apophysis (Fig. 131) and the epigynum (Fig. 132) are also diagnostic. Variation in this species is discussed above.

Male (Sarasota Co., Florida). Total length (exclusive of chelicerae) 3.67 mm. Carapace 1.79 mm long, 1.31 mm wide, cephalic width 0.99 mm, clypeus height 0.05 mm, light reddish brown, darkest at sides, cephalic area shiny, glabrous. Eyes: diameters (mm): AME 0.07, ALE 0.09, PME 0.08, PLE 0.09; anterior eye row 0.50 mm long, recurved; posterior eye row 0.62 mm long, procurved; MOQ length 0.27 mm, front width 0.22 mm, back width 0.31 mm; eye interdistances (mm): AME-AME 0.07, AME-ALE 0.05, PME-PME 0.14, PME-PLE 0.13, ALE-PLE 0.04.

Sternum 1.04 mm long, 0.74 mm wide, pale yellow, darker around borders. Chelicerae 1.00 mm long with 3 promarginal teeth and 6 retromarginal denticles, dark orange-brown. Labium and endites light orange-brown. Endites slightly invaginated at middle.

Abdomen 2.00 mm long, 1.13 mm wide, pale white with transverse rows of dark spots, venter pale. Epigastric furrow 0.50 mm from tracheal spiracle, spiracle 0.65 mm from base of spinnerets.

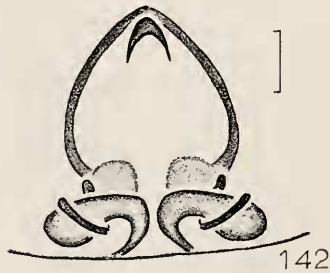
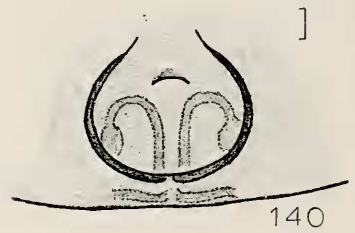
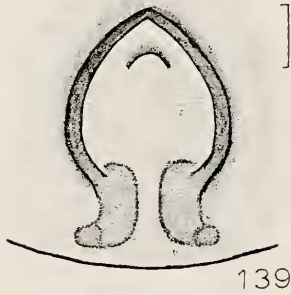
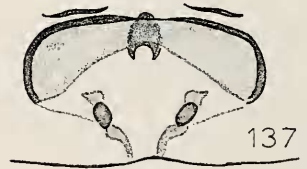
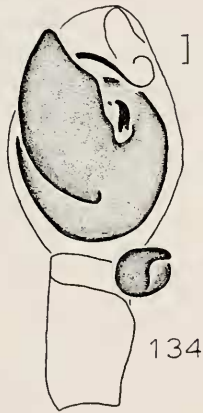
Legs light orange-brown, unmodified. Tibial lengths (mm) and indices: I 1.60, 12; II 1.33, 14; III 0.80, 24; IV 1.26, 18. Ventral spination: tibiae I 2-2-0, II 1-2-0, III 1-2-2, IV 2-2-2; metatarsi I, II 2-2-0, III 2-1-2, IV 2-2-2.

Palpus as in Figure 131.

Female (Sarasota Co., Florida). Coloration as in male.

Total length 3.86 mm. Carapace 1.71 mm long, 1.39 mm wide, cephalic width 1.06 mm, clypeus height 0.09 mm. Eyes: diameters (mm): AME 0.08, ALE 0.09, PME 0.09, PLE 0.09; anterior eye row 0.55 mm long, straight; posterior eye row 0.70 mm long, procurved; MOQ length 0.22 mm, front width 0.23 mm, back width 0.34 mm; eye interdistances (mm): AME-AME 0.06, AME-ALE 0.07, PME-PME 0.16, PME-PLE 0.14, ALE-PLE 0.05.

Sternum 0.97 mm long, 0.76 mm wide. Chelicerae 0.82 mm long with teeth as in male.



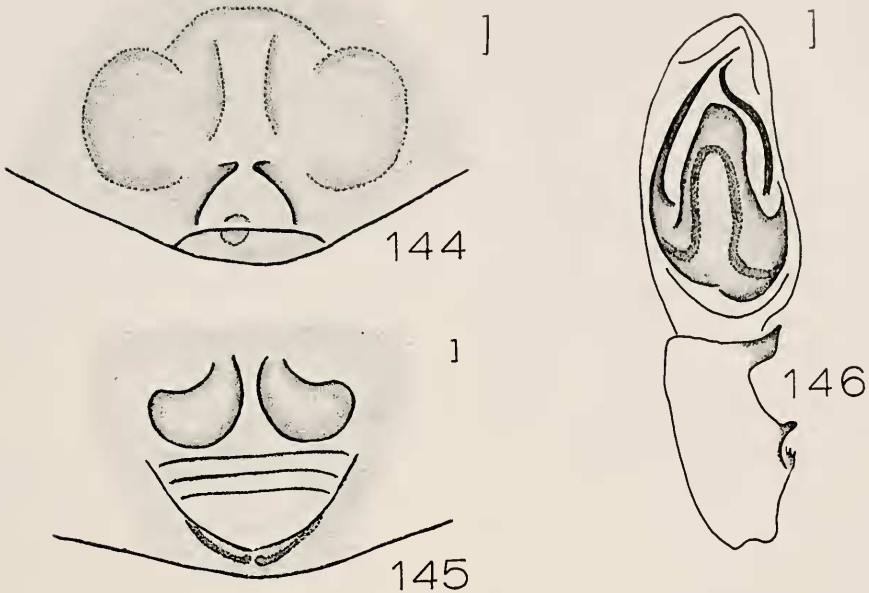


Plate 12

Figures 144–145. Epigyna, ventral view. Figure 146. Left palp, ventral view. 144. *Wulfila pallidus* O. P.-Cambridge. 145. *Aysha prospera* Keyserling. 146. *Teudis gentilis* O. P.-Cambridge.

Abdomen 2.20 mm long, 1.44 mm wide. Epigastric furrow 0.68 mm from tracheal spiracle, spiracle 0.85 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 1.13, 18; II 0.97, 21; III 0.67, 30; IV 1.06, 22. Ventral spination as in male except tibiae III, IV 1–1–2 and metatarsi IV 2–1–2.

Epigynum as in Figure 132, internal genitalia as in Figure 133.

Natural history. Mature males and females have been taken year-round. Specimens have been taken on loblolly pine and fall webworm nests.

Distribution. Southern North America, from Maryland south to Florida, Mexico, and Panama, west to California and Baja California (Map 5).

Teudis calcar (Bryant), new combination
Map 3; Figures 128–130

Anyphaena calcar Bryant, 1931, *Psyche*, 38: 107, pl. 6, fig. 3 (♂). Male holotype from Dunedin, Florida, in MCZ, examined. Roewer, 1954, *Katalog der Araneae*, 2: 524. Bonnet, 1955, *Bibliographia Araneorum* 2: 342.

Anyphaena schwarzi Gertsch, 1933, *Amer. Mus. Novitates*, No. 637: 10, fig. 12 (♀). Female holotype from Brownsville, Texas, in AMNH, examined. Roewer, 1954, *Katalog der Araneae*, 2: 529. Bonnet, 1955, *Bibliographia Araneorum*, 2: 347. NEW SYNONYMY.

Diagnosis. *Teudis calcar* may be distinguished from all other anyphaenids in America north of Mexico by the retro-lateral patellar apophysis of males (Fig. 128) and the epigynum of females (Fig. 129).

Plate 11

Figures 128, 131, 134, 135. Left palpi, ventral view. Figures 129, 132, 136, 138–140. Epigyna, ventral view. Figures 130, 133, 137, 141–143. Internal genitalia, dorsal view. 128–130. *Teudis calcar* (Bryant). 131–133. *Teudis mordax* (O. P.-Cambridge). 134. *Anyphaena accentuata* (Walckenaer). 135–137. *Anyphaena aperta* (Banks). 138, 141. *Aysha cambridgei* Bryant. 139, 142. *Aysha arunda* new species. 140, 143. *Aysha gracilis* (Hentz).

Male (Hidalgo Co., Texas). Coloration as in *Teudis mordax* except that the abdomen is uniformly light gray and the femora are much darker than the other leg segments.

Total length 3.78 mm. Carapace 1.76 mm long, 1.42 mm wide, cephalic width 0.95 mm, clypeus height 0.10 mm. Eyes: diameters (mm): AME 0.07, ALE 0.11, PME 0.11, PLE 0.11; anterior eye row 0.43 mm long, recurved; posterior eye row 0.64 mm long, procurved; MOQ length 0.25 mm, front width 0.22 mm, back width 0.35 mm; eye interdistances (mm): AME-AME 0.07, AME-ALE 0.03, PME-PME 0.14, PME-PLA 0.11, ALE-PLA 0.03.

Sternum 1.03 mm long, 0.83 mm wide. Chelicerae 0.75 mm long with 3 promarginal teeth and 4 retromarginal denticles.

Abdomen 2.30 mm long, 1.33 mm wide. Epigastric furrow 0.49 mm from tracheal spiracle, spiracle 0.81 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 1.23, 17; II 1.01, 19; III 0.67, 30; IV 1.12, 21. Ventral spination: tibiae I, II 1-2-0, III, IV 1-1-2; metatarsi I, II 2-0-0, III, IV 2-2-2.

Palpus as in Figure 128.

Female (San Patricio Co., Texas). Coloration as in male.

Total length 4.97 mm. Carapace 1.94 mm long, 1.55 mm wide, cephalic width 1.00 mm, clypeus height 0.09 mm. Eyes: diameters (mm): AME 0.07, ALE 0.11, PME 0.11, PLE 0.11; anterior eye row 0.52 mm long, recurved; posterior eye row 0.72 mm long, procurved; MOQ length 0.27 mm, front width 0.23 mm, back width 0.38 mm; eye interdistances (mm): AME-AME 0.09, AME-ALE 0.04, PME-PME 0.17, PME-PLA 0.11, ALE-PLA 0.06.

Sternum 1.16 mm long, 0.96 mm wide. Chelicerae 0.72 mm long with 4 promarginal teeth and 4 retromarginal denticles.

Abdomen 3.13 mm long, 1.98 mm wide. Epigastric furrow 0.70 mm from tracheal spiracle, spiracle 1.16 mm from base of spinnerets.

Tibial lengths (mm) and indices: I 1.22, 20; II 1.08, 22; III 0.86, 29; IV 1.35, 21. Ventral spination as in male save metatarsi III 2-0-2.

Epigynum as in Figure 129, internal genitalia as in Figure 130.

Natural history. Mature males have been taken from early April through mid-July, mature females from late May through mid-July. Nothing is known of the habits of this species.

Distribution. Florida and Texas (Map 3).

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